THE COTTON GIN AND OIL MILL

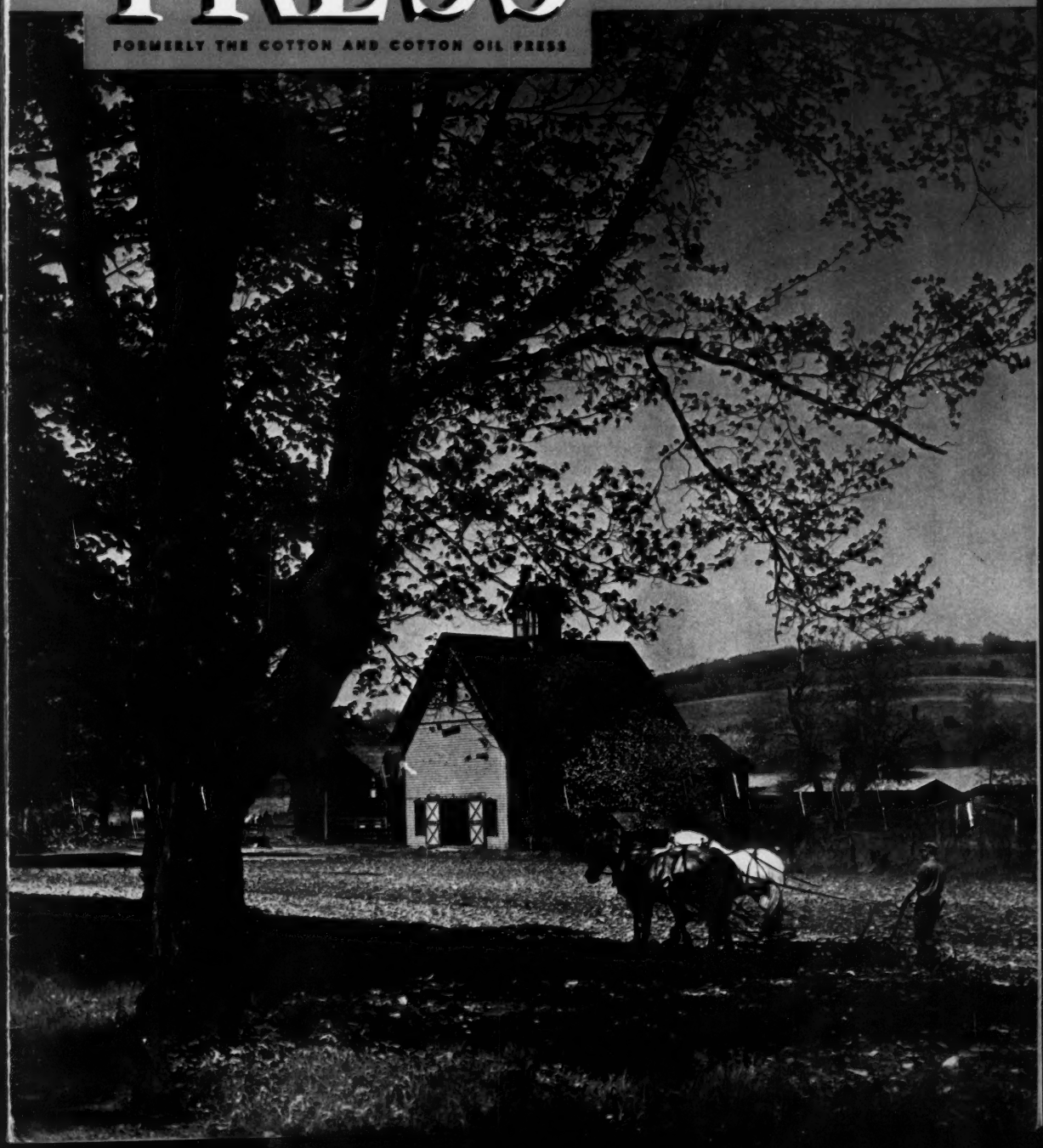
PRESS

FEBRUARY 17, 1951

52nd YEAR

THE MAGAZINE OF THE COTTON GINNING AND OILSEED PROCESSING INDUSTRIES

FORMERLY THE COTTON AND COTTON OIL PRESS



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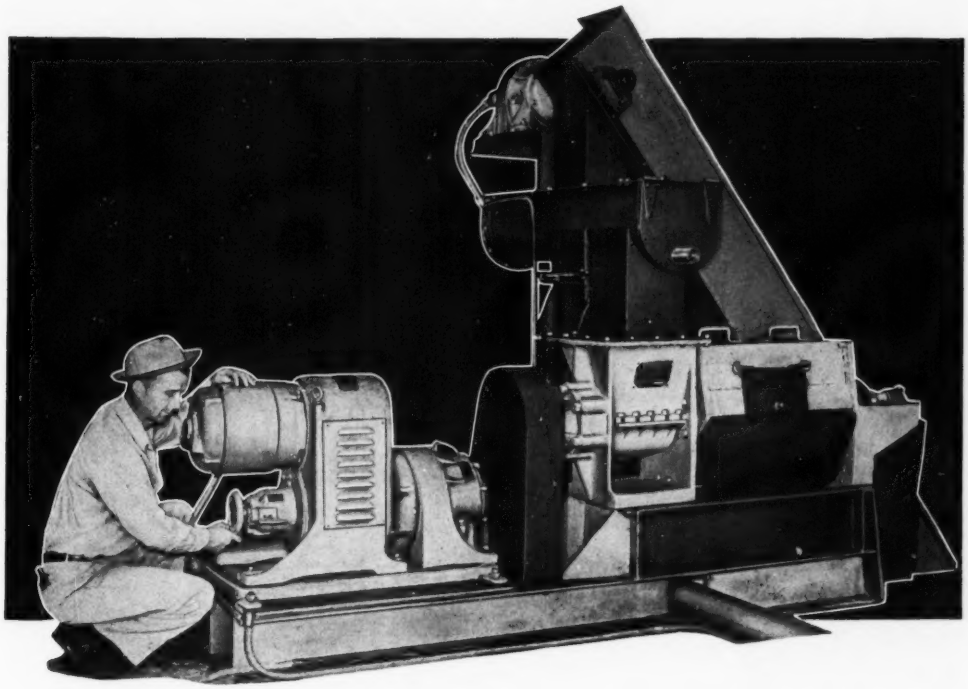

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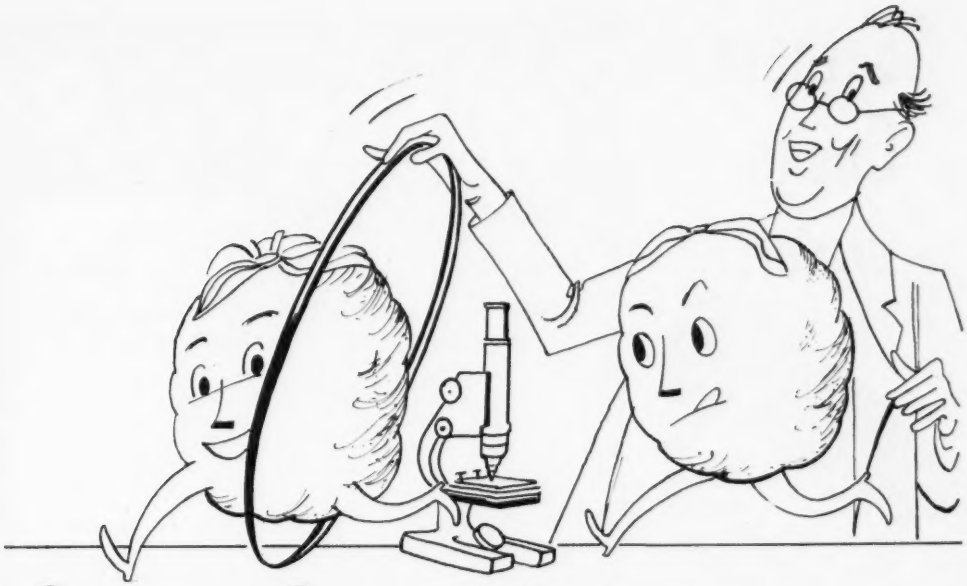

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His research is making cotton fabrics that will stay dry in the rain . . . that resist heat, wrinkling and shrinkage . . . that have the brilliant luster demanded by expensive fashions . . . that have the strength for heavy duty use. The scientist and King Cotton are working together to adapt nature's nearly perfect fiber to steadily widening usage.

Many fields of research — both government and privately sponsored — have been explored in an effort to make better cotton products and find new uses for cotton. In the laboratory, the emphasis is on analyzing and studying the cotton fiber itself. Next comes research in processing the fiber to obtain improved yarns and fabrics. Then, marketing experts take over to complement the scientist's role.

Success of this research depends on two factors — a periodic critical review by qualified research authorities, and the dissemination of all information to the industry so that theoretical findings may be given practical application. To serve these ends, the National Cotton Council, as spokesman for the entire industry, annually conducts its Cotton Research Clinic, an important part of an overall program designed to help cotton and the 13 million people who depend on it for a livelihood.

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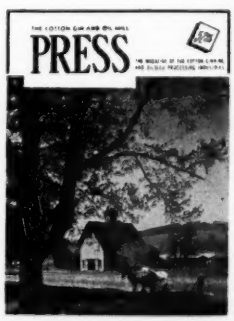
Volume 52 **February 17, 1951** **Number 4**

Published every other Saturday in our own printing plant at 3116 Commerce Street, Dallas 1, Texas

The Cover

The middle of February may seem like a most inopportune time to publish a Spring picture, but we couldn't resist the impulse to bring a little sunshine into the lives of many people in the South who, two weeks ago, were facing one of the worst periods of cold weather they ever experienced. Right now, at this writing, weather in Dallas has a springlike quality. Tomorrow we may be checking the radiator of the old bus and wondering, all over again, whether we shall ever see the end of Winter.

Photo by A. Devaney



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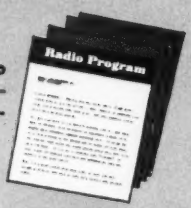
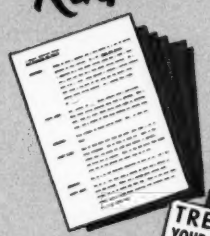


Radio Script



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Modern Ginning Methods

By FRANCIS L. GERDES
In Charge, Stoneville Cotton Laboratory, Research and Testing Division, USDA

IN THIS PAPER, read at the Oklahoma Cotton Ginners' Association convention held Feb. 1-2 at Oklahoma City, Mr. Gerdes discusses the technology and economics of modern ginning methods and fiber and spinning quality elements of significance to spinners from the standpoint of ginning.

DURING THE LAST 2 or 3 years, much has been said and written about modern ginning methods—both pro and con—with respect to their effects on fiber and spinning quality and returns to growers. Thus, consideration of the subject of technology and economics of modern ginning methods is of a timely nature. Before going into this subject, however, it appears desirable to devote a little time to a discussion of fiber and spinning quality elements of significance to spinners from the standpoint of ginning.

Until recently, the average cotton ginner was conversant mainly with such broad gin damage terms as "gin cuts," "seedy cotton," and "shaly cotton." He now hears a great deal about "neps" as being associated with bad ginning practices, together with "soft" or "poor-character" cotton. In the parlance of ginners, such terms as tensile strength, fiber length uniformity, and neppiness have become familiar because they indicate important elements of quality that control spinning value in so far as the ginner is concerned.

Neps have been defined as small knots of tangled cotton fiber.[1] Their formation is the result of manipulation and, consequently, they are not found in unpicked cotton. But they do occur in varying numbers in ginned lint and in all the products of the processes through which the raw cotton passes in the manufacturing of yarn.

The occurrence of neps in any abundance in yarn and, consequently, in the cloth manufactured from it is considered a serious problem in quality. Neps detract from the general evenness of the yarn and appear as specks or irregular places in the woven fabric. If the cloth is to be dyed the neps present an additional and more serious problem. Most neps are composed entirely of thin-walled fibers, or at least they contain some of such fibers. Thin-walled fibers absorb less dye than do those that are thick-walled; consequently, neps appear in certain types of dyed cloth as light specks against the surrounding darker background. Such cloth is considered very inferior in quality to that of evenly dyed fabrics. Other nep-like structures may be caused by seed-coat fragments being chipped in the ginning process with tufts of fiber still attached to them. Also, small particles of thin-walled fibers in whole motes or crushed motes that escape the ginning processes have a tendency to produce yarn and fabric imperfections somewhat similar to those associated with neps or tangled fiber masses.

Neps that are closely incorporated in the yarn produce

[1]Pearson, N. L.: Neps in Cotton Yarns as Related to Variety, Location, and Season of Growth. U.S. Dept. Agr. Tech. Bul. 878, 18 pp., illus. 1944.

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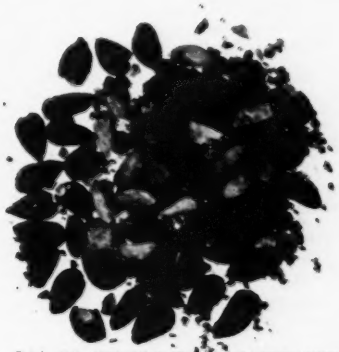

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weak places, because the fibers must pass around these knots; and, as a result, the close fiber association that gives strength to cotton yarn is broken. It is thought also that much of the breakage or "ends down" that occurs in spinning may be caused in part by the presence of neps.

Yarns spun from different lots of cotton may vary considerably in neppiness. In general, such variations have been attributed, in part, to differences in fiber length, fiber weight per inch, and the percentage of thin-walled fibers in the cotton. Moreover, neppiness has been found to vary with variety and with environment.

Variety has been found to have a greater effect on neppiness than either location or season. In this connection, studies have shown that there is a significant general tendency for the number of neps in yarn to increase with increases in fiber length, decreases in fiber weight per inch, and, to some extent, by the percentage of thin-walled fibers. Moreover, certain ginning practices further increase the tendency of cotton to show increased neppiness in yarn and fabrics.

Variety and environmental conditions, as in the case of influencing neppiness, have been proved to be important factors affecting fiber length, length uniformity, strength, fineness, and maturity. Here, again, some of the properties may be modified to some extent by practices employed in conditioning, cleaning, and ginning of the seed cotton. Specifically, fiber length, length uniformity, and tensile strength are fiber properties that may be influenced in the ginning process. Fiber tensile strength generally has been found to be the most important of these fiber properties from the standpoint of variance in strength of the usual counts of carded yarn. Of considerable importance are length uniformity and fiber length. From the standpoint of appearance grade of yarn, length uniformity is the most significant factor. Grade and then length are of significance in so far as this element of spinning value is concerned.

The one element of spinning quality that may be affected favorably as well as preserved or lowered in ginning processes is that of manufacturing waste. Unlike the other elements which seldom are improved but which can be preserved, manufacturing waste can be affected beneficially from the spinners' standpoint as well as preserved by proper ginning treatment, as it is influenced mainly by harvesting and ginning practices and not so much by variety and place of growth. It is usually directly associated with grade of the cotton. Other favorable factors are increased fiber maturity and strength and reduced fiber fineness.

After having defined in broad terms some of the fiber and spinning quality elements of importance from the standpoint of ginning, consideration should be given to those factors which stand a chance of being adversely affected and then those likely to be improved by certain ginning methods. Rough ginning, no doubt, is more familiar to the ginner as a gin damage property than any other type of fiber damage. Every ginner knows that rough ginning lowers the grade and value of cotton through increased nappiness, or large tangled masses of fibers, and that such condition is caused mainly by ginning cotton in a damp or wet condition or ginning cotton with dense seed rolls, produced either by fast feeding to increase ginning capacity or restricting the passage of the ginned seed from the seed rolls to increase gin turnout.

When cotton is ginned wet, there is a tendency for the seed to chip and produce seed-coat fragments and when ginning with dense seed rolls there is not only a tendency to chip but, even worse, to yield immature linters fibers to accompany the usable lint to the press and detract from the spinning value of the bale of cotton by increasing neps. In addition to these factors being common causes of rough ginning and increased neppiness, the practices of repeated passage of overflow cotton through overhead cleaning and drying machinery and the use of excessive machinery of this kind in cleaning cotton, together with overfeeding the machines involved, cause the seed locks to be tangled or roped to such an extent as to produce roughness and neppiness in the cotton. Neppiness associated with fast feeding of cotton to gin stands may be further accentuated by the action of saw-cylinder lint cleaners, operating beyond normal capacity behind the gin stands, being fed at a rate in excess of that for which the gin stand is designed to provide smooth ginning.

Fiber length is seldom affected by ginning methods except in the case of overdrying seed cotton at gins or ginning cotton with subnormal moisture content. Such losses in length have been found to be as much as 1/16 inch when excessive drying was practiced to the extent of reducing the lint moisture content to as low as 2 or 3 percent. On the other hand, there have been instances observed wherein cotton could be ginned with a moisture content sufficiently high as to produce gin-cut fiber and cause the length to be penalized. Frequently, length uniformity losses are associated with mechanical reductions in staple length.

Aside from the length properties, fiber tensile strength may be adversely affected as a result of too much drying at gins, but laboratory tests have failed to reveal losses of tensile strength attributable to any other process or malpractice in ginning. The fiber tensile strength losses associated with overdrying as recorded in laboratory tests seldom exceed 3,000 pounds per square inch, usually showing average losses of about 2,000 pounds per square inch, with single-stage drying at temperatures in excess of 300° F., and multiple-stage drying at lower temperatures producing comparable moisture reductions to those resulting from high drying temperatures in single-stage drying.

After covering almost all of the sources of fiber damage in ginning, it appears desirable to turn to the favorable side of the picture. It cannot be disputed that modern gin cleaning and drying methods have allowed producers to adopt mechanical harvesting and other rough-picking methods that enable them to harvest their crops and realize a satisfactory return on their operations. Therefore, many favorable effects of modern ginning methods are in evidence throughout the Cotton Belt with the ginner endeavoring to make these effects compatible with other elements of quality emphasized by spinners, as being of further significance in cotton manufacturing. It is not uncommon now for modern gins to consistently produce grades of Strict Low Middling to Middling in comparison with grades of Strict Good Ordinary to Low Middling only 5 years ago on machine-picked cotton in the humid areas of the Cotton Belt. In the arid sections of the Cotton Belt, grades on machine-picked cotton generally range from Middling to Strict Middling. The first prerequisite to improve grades, as well as to efficient ginning without chokages on mechanically harvested cotton, is adequate drying. Machines for removing burs, sticks, and stems are indispensable. The necessary machines, operated in proper sequence, are highly beneficial in increasing both the grade and value of cotton. Optimum machine combinations, properly operated, therefore, reduce the manufacturing losses in cotton mills.

Cotton driers and lint cleaners—relatively new ginning processes—have proved to be outstanding in improving grades of cotton. These machines, the same as any other machines, can be abused in operation and thus be a source of complaints on the part of handlers and users of cotton. Their proper use, however, ultimately depends on the returns which they yield to growers. It is estimated that during the 1951 ginning season there will be 6,000 gin plants operating driers and over 800 gins using lint cleaners. The growing tendency toward installation of these machines is indicative of their value to producers.

In order to provide a complete evaluation of lint cleaners, studies of the economic aspects of this cleaning process have been carried out and completed as a supplement to extensive laboratory and field test data on the technological phases of lint cleaning. Tests conducted on full-scale laboratory models under controlled conditions and at commercially operated lint cleaner gins in New Mexico, the High Plains and Lower Rio Grande Valley area of Texas, and in the Mississippi Valley indicate that significant bale value improvements, ranging from one-third to two-thirds grade, are obtainable. Spinning test data, as well as fiber test and classification results in connection with 106 spinning tests, indicate that in addition to grade improvements obtained, such fiber properties as length, length uniformity, strength, and fineness were unaffected by lint cleaners. The foreign matter content of the lint was reduced by approximately 8½ pounds per bale, and the picker and card waste reduction amounted to 1.2 percent after the cotton was subjected to lint cleaning. Neps per 100 inches of card web averaged 29 for the 53 samples of cotton not lint cleaned, and 31 for the 53 samples of lint cleaned cotton. This difference was too small and insignificant to affect the average appearance or smoothness of the yarn.

Tests involving laboratory and commercially operated lint cleaners revealed that operating practices exert a significant influence on the grades obtained and the fiber and spinning properties of lint so cleaned. Such practices as feeding cotton to the lint cleaners at a fast rate and the use of excessive amounts of seed cotton cleaning machinery, prevent realization of full grade improvements and will result in significantly impaired spinning value of lint cotton. Lint cleaners, like other complicated gin machinery, require constant care and attention to avoid chokages and quality damages.

The total cost of ginning at commercially operated plants providing the service of lint cleaning in the Yazoo-Missis-

sippi Delta in the year 1949 was slightly lower than the cost of ginning service provided by gins not equipped with lint cleaners at their respective average volumes of 3,409 bales and 2,950 bales. The higher charges for depreciation and interest on investment which resulted from an increased machinery replacement value of approximately $20,000 for lint-cleaner-equipped plants resulted in fixed costs being slightly higher for these latter plants.

Although total operating costs for lint-cleaner-equipped gins were slightly lower than for conventionally equipped plants, these lower costs result partly from economies through larger volumes and the fact that these plants were erected more recently and required less repair expense during the first year of operation. Labor costs were also slightly lower but were due to slightly lower wage rates, as the man-hour requirements per bale were identical in spite of the fact that these gins employed more men per crew. The higher fuel costs for lint-cleaner-equipped gins as compared with conventionally equipped gins resulted largely from the type of fuel employed by the plants in the two groups for power and for drier operation, as more of the lint-cleaner-equipped gins used artificial gas as a source of power and drier fuel.

Power requirements for operation of lint cleaners are approximately 5 to 10 horsepower per unit. Additional fuel requirements for the operation of this machinery, therefore, are not considered to be significant when compared with the amount of fuel employed in the operation of additional driers in order to obtain better grades at gins not equipped with lint cleaners. It was the general practice in 1949 for the gins not having lint cleaners to use more drying processes at higher air-drying temperatures than lint-cleaner-equipped plants. When it is realized that the consumption of drier fuel approximates 2 gallons of artificial gas per bale, the expense involved in supplying power for lint cleaners assumes less importance. Therefore, under conditions more nearly approaching normal, it can be expected that some of these cost factors will tend to increase total cost of operation of lint-cleaner-equipped plants from 50 to 75 cents per bale.

Gins equipped with lint cleaners received $1.55 per bale more in gin tolls than did gins not employing this equipment. This differential was offset by 25 cents extra, which conventionally equipped plants received for bagging and ties, thus making the net advantage in terms of ginning revenue per bale amount to $1.30 for lint-cleaner-equipped plants. At their respective volumes, nonlint cleaner gins managed to "break even" on ginning revenue alone, while those gins using lint cleaners showed a profit of $1.55 per bale.

For the season, lint cleaners removed 6.8 pounds of foreign matter per bale from hand-picked cotton, and 11.6 pounds from machine-picked cotton, but some weight loss resulted through the practice of employing higher air-drying temperatures by those gins not using lint cleaners. While it is generally conceded within the ginning industry that the use of such temperatures is helpful in effectively removing foreign matter, it is also true that excessive amounts of moisture are removed from lint. The extra moisture and foreign matter removal is empha-

(Continued on Page 48)

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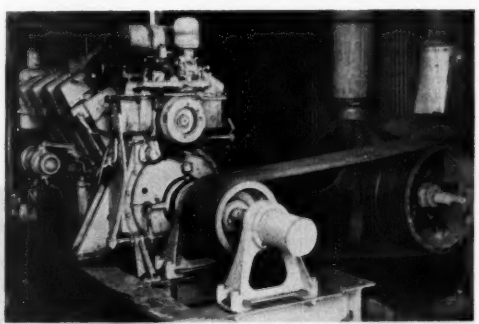

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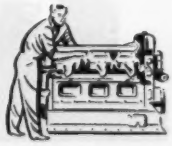

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• *Research on*

Fractionation of Cottonseed Meats[1,2]

By NESTOR B. KNOEPFLER, Fellow, National Cottonseed Products Association; A. V. GRACI, Jr., J. J. SPADARO, and E. A. GASTROCK, Southern Regional Research Laboratory[3], New Orleans, Louisiana

THE National Cottonseed Products Association has actively supported research fellowships on cottonseed products in the United States Department of Agriculture for a quarter of a century. For the past 3 years one of the fellowships has been maintained at the Southern Regional Research Laboratory for the purpose of aiding in the development of a process for fractionation of cottonseed meats to produce a meal and oil essentially free of pigment glands and pigment glands essentially free of meal. The results of the first 2 years have been reported (1) by the previous fellow, C. G. Reuther, Jr. The subject report covers the work conducted during the third year of the project by Nestor B. Knoepfler, the present fellow, and by the group of research chemical engineers with whom he is associated in the planning, conducting, and evaluating engineering investigations on the fractionation process.

The objective of the fractionation research is to provide a means of recovering the principal components of cottonseed in their purest possible forms, that is, with the minimum admixture with each other. The first phase of such a process, therefore, is to detach completely the pigment glands from the meal tissue by a comminution method which must be carefully controlled to prevent breakage of glands to avoid contamination of the meal. After this step the detached components may be further separated by any of several different methods and recovered as "fractions."

The previous report (1) on the development of the fractionation process included a description of the first method of accomplishing a separation of the components by gravity flotation (2) as well as a description of the development of the differential settling method on a laboratory scale (3) and on a batch pilot-plant scale (4). The report also anticipated the development of a continuous differential settling process and some of its associated problems.

While the gravity flotation method, in which mixed solvents with a specific gravity between the specific gravities of the components were used, proved satisfactory on a pre-pilot plant scale as a means of producing a meal essentially free of pigment glands and hulls for the early nutritional studies, it presented major difficulties (1, 2, 3, 4) for continuous processing in any industrial adaptation.

The differential settling process takes advantage of the different rates of settling of the components of cottonseed in a single solvent, hexane. Hexane is commercially used in solvent-extraction plants and eliminates many of the problems inherent in the properties of the solvents required in flotation. The different rates of settling of the components of cottonseed in hexane are due to the different physical characteristics after comminution.

The laboratory work on differential settling led to the development of the batch pilot-plant process. Results showed that the process could be made commercially feasible if the various unit operations were integrated on a continuous basis.

Efforts have been directed during the past year to the development of a continuous pilot-plant fractionation process. To develop the continuous process detailed studies were made of the following principal factors: continuous closed circuit disintegration and screenings; integration of the present solvent-extraction pilot plant and the fractionation pilot plant; and the continuous desolventization of fine meal. Attention was also given to the preparation factors affecting fractionation, to the methods of further reducing gossypol, and to product evaluation.

Development of a Continuous Pilot-Plant Process

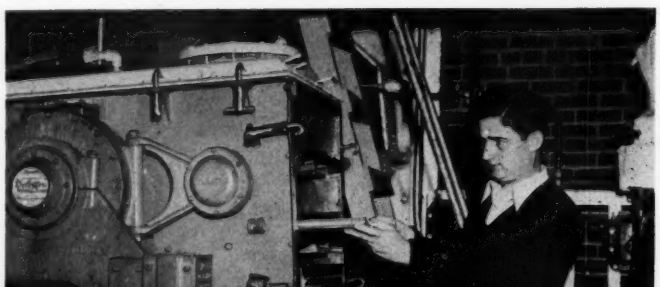
Preliminary disintegration and screening experiments on a pre-pilot scale were conducted with the purpose of devising a continuous closed circuit operation on a pilot-plant scale. These tests showed that fine meals with free gossypol content ranging from 0.04 to 0.09% could be obtained with actual yields of 65% and a potential yield of 80% calculated by assuming continuous commercial operation.

On the basis of these experiments and on the findings previously reported (1) a theoretical flow diagram was drawn for a continuous process which would integrate the operation of a combined solvent extraction-fractionation plant. A plant layout which would utilize available pilot-plant equipment with a minimum of modifications was then drawn up. Using this layout the actual pilot-plant fractionation unit was installed. Minor mechanical modifications were made to permit the discharge of solvent-damp marc from the pilot-plant extractors, the feeding of solvent-damp fine meal to the dryer, the differential settling by a 2-tank countercurrent method, and to improve the handling of slurries throughout the plant. A simplified flow diagram of the process is shown (Fig. 3).

The installation included a closed circuit disintegration-screening system as follows: A continuous feeder capable of handling either solvent-damp marc from the solvent-extraction pilot plant (5) or undefatted flakes was installed to feed the modified dissolver-type disintegrator. The disintegrated material at a concentration of 50% solids overflowed continuously into a surge tank where it was diluted to 18% solids, and pumped to the modified continuous closed mechanical shaker-type screener. The on-20-mesh hull fraction was continuously removed

(Continued on Page 39)

FIG. 1. Nestor B. Knoepfler, NCPA Fellow at the Southern Regional Research Laboratory, is shown inspecting the continuous wet shaker screener after a fractionation run.



[1]Annual Report of the National Cottonseed Products Association Fellow for the year 1950.
[2]Report of a study made under the Research and Marketing Act of 1946.
[3]One of the laboratories of the Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration, U. S. Department of Agriculture.

• *Research on*

Storage of Cottonseed[1]

By EDITH A. JENSEN, Fellow, National Cottonseed Products Association; and M. G. LAMBOU and A. M. ALTSCHUL, Southern Regional Research Laboratory[2], New Orleans, Louisiana.

Introduction

IN THE preceding annual report (The Cotton Gin and Oil Mill Press, January 1950), it was pointed out that developing successful methods for improving the storage qualities of cottonseed necessitated a varied and broad approach to the problem. Many types of information are needed, such as practical knowledge of the behavior of large lots of cottonseed during storage under commercial conditions; fundamental information concerning the biochemical changes that take place in cottonseed during handling and storage; and practical tests of any agents designed to improve the storage properties of the seed. An outline of such a program was presented in the previous report, and every effort has been made to follow this plan.

During 1950, the first phase, mill-scale research conducted for several years in cooperation with industry, was completed. Data concerning the characteristic behavior of cottonseed during storage in a mill were organized and presented at the Spring meeting of the American Oil Chemists' Society in Atlanta, Ga. A publication containing these results is now in press (Journal American Oil Chemists' Society).

A laboratory research program was started to determine the effect of other methods of handling as complementary agents to chemical treatment. A method of heating cottonseed was developed and the effect of heat treatment is being investigated. The specific effect of fungicides on the spontaneous development of heat and the formation of free fatty acids in cottonseed during storage is another phase being studied. When these data are available, it may be possible to supplement chemical treatment with heat, specific fungicides, or both.

All experiments, with the exception of those on the effect of selected fungicides on the spontaneous heating of cottonseed, were conducted with naturally moist seed since it was found that deterioration in naturally moist seed is not so easily inhibited by chemical treatment as that in artificially conditioned seed of the same moisture content.

This report is a summary only of the progress to date on the above program in which the Fellow participates. A more complete evaluation of some of the experiments must await their conclusion. As in previous years, the program of the Fellow was not confined to any one aspect of the overall storage problem. Moreover, the Fellow was kept in touch with all phases of the storage research work and was given whatever assistance was needed in any aspect of the work by other members of the Laboratory staff.

Mill-scale Storage Research

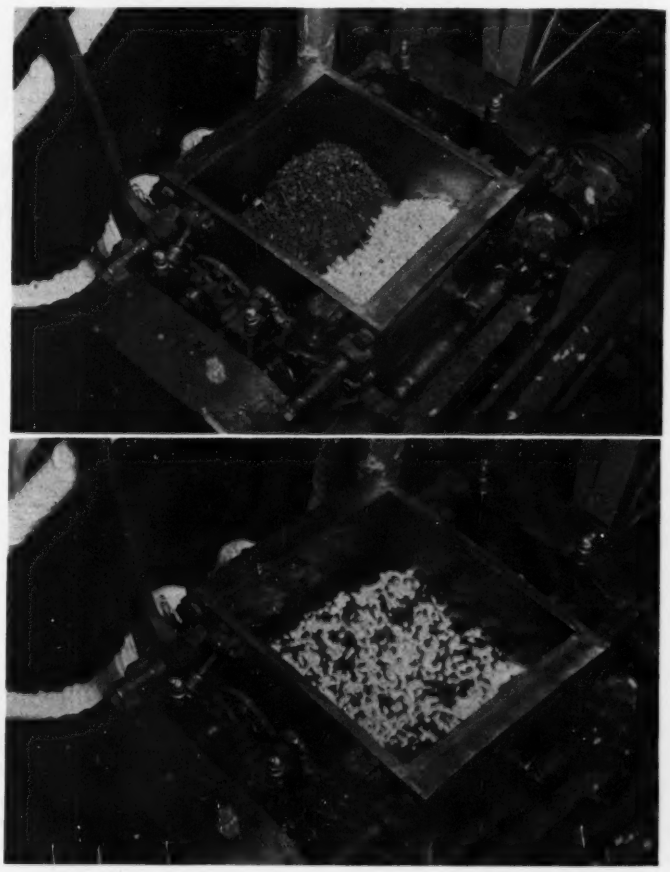
Completion of the 1949-1950 mill-scale experiment concluded the first phase of the large-scale storage research. Results of all the experiments giving information on the characteristic storage behavior of cottonseed have been summarized as follows:

1. The production of heat and the rate at which free fatty acids are formed in cottonseed are dependent not only on the initial moisture content but also on the initial free fatty acids content.
2. A reduction in moisture content by sustained aeration does not completely control the rapid rise in free fatty acids content which takes place during the initial month of storage.
3. Whenever there has been extensive deterioration during storage, there appears to be a decrease in the oil content of the seed.
4. The refining loss appears to be proportional to the quantity of free fatty acids in the crude oil.

In addition, it was found in these mill-scale tests that when chemical treatment was applied, there was a reduction in the rate of deterioration in cottonseed during storage. Chemical treatment supplemented by aeration eliminated heating during the entire storage interval, but retarded the formation of free fatty acids for a limited period. Investigations are now directed toward prolonging the interval during which the development of free fatty acids is inhibited. The most significant result of this phase of experimentation is that extensive information is now available on the effect of one

(Continued on Page 44)

FIG. 1. Top, modified Baker-Perkins' mixer loaded with delinted and fuzzy cottonseed. Bottom, after 1 minute mixing.



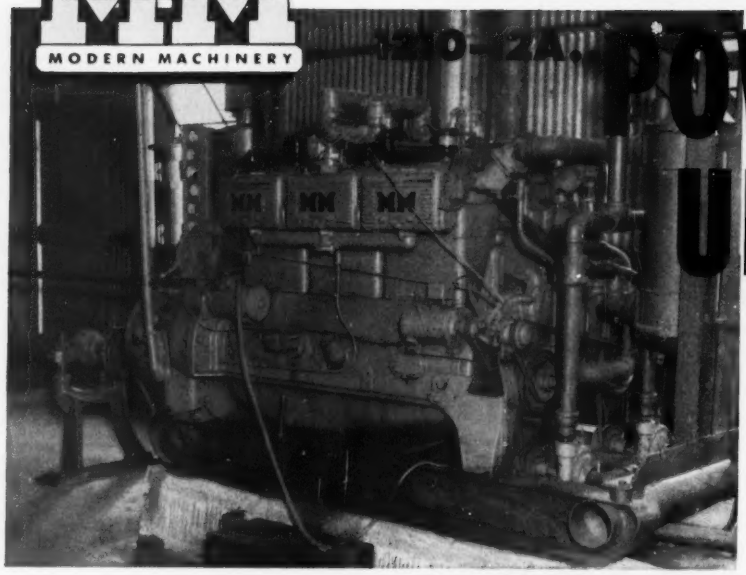
[1]Annual Report of the National Cottonseed Products Association Fellow for 1950.

[2]One of the laboratories of the Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration, U. S. Department of Agriculture.

MINNEAPOLIS-MOLINE

MODERN MACHINERY

1210-12A POWER UNITS



The Beene Planting Company's gin is operating the following with *dependable, low-cost power* from two MM 1210-12A engines:

5—80 Saw Continental Model F-3 Brush Gins
5—80 Saw Continental 4-X Huller-Cleaner-Feeders
1—5-80 Saw Model "40" Condenser
1—5-80 Saw Submerged Lint Flue System
1—Continental Double Box Simplex Hydraulic Press
1—Continental E J Mechanical Tramper
1—Conveyor-Distributor Elevating System
1—45" Suction Fan
1—72" Revolving Drum Separator
1—Pure Seed Blower with Drag Belt
1—Seed Scale
2—Roots-Connersville Pressure Blowers
3—72" Continental Impact Cleaners
2—Continental Triple Saw Burr Machines
2—Continental 4-Trough Driers
2—45" Hot Air Fans
1—30" Hull Fan with Intake and Discharge Pipe
1—35" Hull Fan with Intake and Discharge Pipe
1—Line of Hull and Mote Conveyors under Gins
1—Add'l 72" Revolving Drum Separator
1—Add'l 50" Revolving Drum Separator

See Your MM Dealer-Distributor or Write

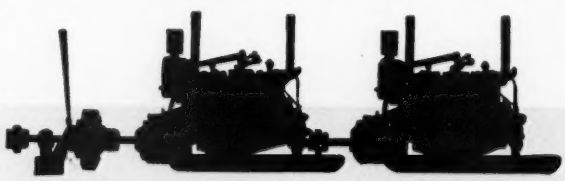
the Modern ..LOW COST... MULTIPLE ENGINE INSTALLATIONS

Two MM 1210-12A engines furnish complete power for the large modern gin plant of the Beene Planting Company at Bossier City, Louisiana.

Since power requirements for their gin stands and the cleaning and drying equipment were about the same, two 1210-12A's were the ideal installation. A single 1210-12A easily drives the gins while the other 1210-12A supplies ample power for all the cleaning and drying equipment. This resulted in very low-cost installation due to low cost per hp of MM engines and minimum installation work.

MM's high production and standardized parts make possible low cost per hp and the best in parts service. Gin operators find that by the use of the front power take-off and master clutch they can add MM single engines or convert to MM grouped engines that provide the right amount of power *at the least cost!* In addition they are able to use the lowest cost fuels available because MM 1210-12A engines are factory equipped for natural gas or LP gas. Built-in gear reductions provide choice of power shaft speeds for direct drive application to eliminate belts, pulleys, idlers, and bearings.

Plan now to see your nearby MM representative for complete facts on lowest cost per hp and a grouped engine layout to fit your floor plan.



MINNEAPOLIS-MOLINE
MINNEAPOLIS 1, MINNESOTA

4-H Club Winners

■ MAXINE TINNEY, Brinkman, Okla. (left), and Beulah Luker, Mangum, Okla., members of the Oklahoma 4-H Club girls' group, model some of the cotton clothing which won them top honors in recent contests at the Oklahoma Cotton Ginners' Association banquet Feb. 1.

Agricultural Aviation Meeting Feb. 19-20

Latest methods of attacking from the air the ancient enemies of the farmer—weeds, insects and plant diseases—are listed for study on the program of the third annual National Agricultural Aviation Conference to be held at the Hotel Peabody in Memphis Feb. 19-20.

Charley Rose, Roseland, Ark., president of the National Flying Farmers Association, sponsors of the meeting, said that discussions also will include aerial fertilization, seeding and defoliation, and that the lastest type of equipment for applying agricultural materials from the air will be described.

In addition to commercial agricultural airmen, program speakers will include federal and state agricultural researchers, Civil Aeronautics Administration officials, aviation editors, and representatives of concerns which manufacture agricultural chemicals and aerial application equipment.

Cooperating with the Flying Farmers in sponsoring the conference are USDA, land grant colleges, the Civil Aeronautics Administration, National Agricultural Chemicals Association, National Cotton Council, National Fertilizer Association, state aviation officials and boards of agriculture, the agricultural committee of the American Petroleum Institute, the Farm Equipment Institute, and Memphis Chamber of Commerce.

Claude L. Welch, Memphis, director, production and marketing division, National Cotton Council, will preside over the opening session. Among the speakers will be Dr. Lippert S. Ellis, director, Arkansas Extension Service, Fayetteville, who will talk on "Research and Education in Agricultural Aviation"; H. L. Haller, special assistant, USDA-BEPQ, Washington, "Development of New Insecticides"; Russell Coleman, president, National Fertilizer Association, Washington, "The Fertilizer Situation for 1951"; and Ernest Hart, president, National Agricultural Chemicals Association, Washington, who will address a luncheon session on the final day of the conference.

Taking part in panel discussions will be Dr. J. E. Adams, head, agronomy and soils department, Texas A. & M. College; Dr. W. H. Tharp, Beltsville, Md., principal physiologist, Division of Cotton and Other Fiber Crops and Diseases, USDA-BPISAE; J. O. Dockins, assistant director in charge, Rice Branch Experiment Station, Stuttgart, Ark.; Harley Daniel, superintendent, Red Plains Conservation Station, Guthrie, Okla.; C. E. Fisher, superintendent, Texas Substation No. 7, Spur, Texas; S. L. Calhoun, entomologist, USDA-BEPQ, Stoneville, Miss.; and Arthur Gieser, chief pilot, USDA-BEPQ, Denver, Colo.

Fertilizer Left in Drill Often Causes Trouble

It does not take long under humid conditions to rust out a fertilizer drill in which some of the fertilizer material has been left. Breakage of drill parts often results from such neglect.

Whenever the drill is out of use for an extended period, it should be run free of fertilizer and the box and mechanism cleaned by hosing it out with water under pressure, according to W. C. Krueger, extension farm engineer at Rutgers University, New Brunswick, N. J. A high pressure spray nozzle is excellent, he said, adding that the important thing is to wash all fertilizer chemicals out.

PICTURED ABOVE are members of a committee appointed at the Southern Weed Conference to develop and conduct a research program in the use of chemicals to control weeds and grasses in cotton. Left to right round the table are: Dr. W. B. Albert, physiologist, South Carolina Agricultural Experiment Station, Clemson; Dr. R. L. Lovvern, in charge, division of weed investigations, USDA-BPISAE, Beltsville, Md.; Dr. L. E. Cowart, E. I. du Pont de Nemours and Co., Louisiana State University; Dr. D. A. Hinkle, head, department of agronomy and soils, Arkansas Agricultural Experiment Station, Fayetteville; John T. Holstun, assistant physiologist, Delta Branch Experiment Station, Stoneville, Miss.; and Dr. Paul J. Talley, technical sales representative, El Dorado, Ark. S. M. McMurray, agronomist, Tennessee Agricultural Experiment Station, Knoxville, also a member of the committee, is not shown in the picture.

Southern Weed Conference Hears Reports on Chemical Control

Further encouragement in the cotton farmer's search for a method of reducing the labor of hoeing weeds and grass in his crop came in a report at the Southern Weed Conference, Memphis, Feb. 8-9, that in the past season chemicals were used successfully to control these unwanted growths.

At the conference a sub-committee released a summary of cotton weed control work in eight cooperating states—Alabama, Arkansas, Georgia, Louisiana, Mississippi, South Carolina, Tennessee and Texas.

The researchers described how weeds and grass had been controlled through application of chemicals both before the cotton plant emerged from the ground and later after it had come up.

The report explained also how pre-emergence treatments and post-emergence treatments had been combined and how both, in combination with flame cultivation, had been successfully used to the extent that hoe labor was practically eliminated.

Describing the combination treatment, the report pointed out that it has been indicated that pre-emergence applications can be used to partially insure weed control several weeks after the cotton plant has come up and to reduce hoe labor considerably regardless of the post-emergence treatment used.

To obtain satisfactory weed control for periods longer than three weeks after the cotton has come up, the summary added, most of the indications are that pre-emergence treatments must be followed by hand hoeing or post-emergence chemicals.

The group pointed out that the chances of success with post-emergence oils appear to be best when preceded by pre-emergence treatments and followed by flame cultivation if needed. With reference to application of oil, followed by flat weeding and shallow cultivation, the report noted that although no reports have been received on such practice, it may have possibilities where flame cultivation is not practical.

In pre-emergence treatment, the subcommittee explained, oil and water soluble dinitros at rates of from four to eight pounds per acre (area actually treated basis) have been successfully used to control annual grasses and small seeded annual broad-leaved weeds for two to three weeks or more past emergence without injuring the cotton.

Describing post - emergence applications, the report noted that two to three applications of post-emergence oils at five gallons per acre per application, concentrated in the eight inch plus drill area (25 gallons per acre for area actually treated) have been used successfully in combination with pre-emergence treatments, with flame cultivation, and in combination with both pre-emergence and flame.

Dr. Walter S. Ball, Sacramento, Calif., chief of the California Bureau of Rodent and Weed Control, was elected president of the Association of Weed Control Conferences at the second annual meeting of the group at Memphis during the Southern Weed Conference.

Dr. W. W. Wozella, Brookings, S. D., head of the department of agronomy, South Dakota Agricultural Experiment Station, was chosen vice-president. Dr. Roy L. Lovvern, Beltsville, Md., head of the division of weed investigations, USDA-BPISAE, was elected secretary.

Alabama Ginners Will Meet on March 29

Judge Sam High of Ashville, president of the Alabama Cotton Ginners' Association announced this week that the annual convention of the association will be held March 28 at the Thomas Jefferson Hotel in Birmingham.

Wage-Hour Determination:

Ginning of Cotton Is Seasonal

Final determination by the federal Wage-Hour administrator that the ginning of cotton is of a seasonal nature was made effective Feb. 14. This action followed the filing of a petition some time ago by the Texas Cotton Ginners' Association for a determination to that effect.

This determination, according to John H. Todd, Washington attorney for the Texas Cotton Ginners' Association, entitles the ginning industry "to the benefits of the partial exemption from overtime pay requirements provided in Section 7 (B) (3) of the Wage-Hour Act. The effect is to relieve the ginner of any legal compulsion to pay his employees an 'overtime' premium for any time worked within 12 hours per day and 56 hours per week, during any 14 work weeks of the calendar year selected by the employer for that purpose.

"The Wage-Hour Administrator contends," Mr. Todd continued, "that the exemption may not be applied to any week before the first lot or after the last lot of the season's cotton is received for ginning. In writing the determination, the administrator inserted the phrase 'when performed during the period or periods when cotton is being received for ginning' for the specific purpose of withholding the exemption from repair and maintenance work during the idle season. The act, however, does not authorize the administrator to impose such a qualification. As a matter of law, it is believed that the qualification is ineffective, and that the exemption may be applied to maintenance and repair work during the idle season."

The Texas Cotton Ginners' Association has asked the regional office of the Wage-Hour Division to render a legal opinion to clarify the qualification added by the administrator.

Ellerbrock Succeeds Danner With Chase

A. P. Ellerbrock has been named general traffic manager of Chase Bag Co., Chicago, to succeed Frank J. Danner, who has retired after more than 25 years of service with the firm.

Ellerbrock has been assistant to Danner during this entire period.

Field Trials Show TCA Is Weedy Grass Killer

The chemical TCA (sodium salt of trichloroacetic acid) has not only proved itself a worthy foe of perennial weedy grasses in extensive field trials, but also is showing promise in killing annual weedy grasses in certain TCA-tolerant crops, such as sugar beets and table beets, flax, alfalfa, and other legume crops, according to a report by L. M. Stahler, USDA agronomist.

Stahler believes that if definite treatment practices and dates can be established by future research, TCA will become one of the farmers' most dependable killers of grass weeds such as quackgrass, Johnson grass and Bermuda grass.

Cottonseed, Soybeans Affected—

Ceiling Prices Set on Some Oils, Meal

In its first industry-wide rollback order this week, the Office of Price Stabilization set new ceiling prices on crude cottonseed, soybean and corn oil. Futures ceilings were also imposed on soybeans and soybean meal.

Aimed at pegging the price of vegetable oil products such as mayonnaise, shortening, margarine, salad oils and salad dressings, the price rollbacks averaged 10 percent on crude cotttonseed oil, five percent on crude soybean oil and 7½ percent on crude corn oil.

• **Cottonseed Oil**—Ceilings on crude cottonseed oil were set as follows:

Illinois, North and South Carolina, Tennessee, Crittenden and Mississippi Counties in Arkansas, New Madrid and Scott Counties in Missouri, Morgan County in Alabama—23⅝ cents per pound.

Alabama (except Morgan County), Arkansas (except Crittenden and Mississippi Counties), Florida, Georgia, Louisiana, Mississippi, Missouri (except New Madrid and Scott Counties), and Graham County in Arizona—23½ cents per pound.

Oklahoma, El Paso County in Texas, and New Mexico—23⅜ cents per pound.

Texas (except El Paso County)—23¼ cents per pound.

Arizona (except Graham County)—23⅞ cents per pound.

San Francisco and Los Angeles, California—24⅜ cents per pound.

• **Soybean Oil**—Crude soybean oil ceilings were set as follows:

Alabama, Arkansas, Florida, Georgia, Illinois, Kansas, Louisiana, Mississippi, Missouri, New Mexico, Oklahoma, Tennessee, and Texas—20½ cents per pound, f.o.b. mill.

Iowa, Minnesota, Nebraska, North and South Dakota—20⅜ cents per pound, f.o.b. mill.

Delaware, Indiana, Kentucky, Michigan, New Jersey, New York, Ohio, Pennsylvania, North and South Carolina, Virginia, and Wisconsin—20½ cents per pound, basis Decatur.

Arizona—21⅛ cents per pound, f.o.b. mill.

California, Oregon, and Washington—21⅝ cents per pound, f.o.b. mill.

• **Corn Oil**—Ceiling prices of crude corn oil were pegged at 24½ cents a pound at Midwestern mills.

• **Soybeans and Soybean Meal**—Soybean meal futures prices were set at $74 bulk, f.o.b. Decatur. A ceiling of $3.33 a bushel was set on futures trading in soybeans at Chicago. Prices vary according to location of sale, being set at $3.18 in some states. The soybean futures ceiling represented a five-cent rollback from the last closing level before the regulations were announced Feb. 12. Bona fide contracts for oil and meal in effect on Feb. 12 may be completed at the contract price.

• At a recent Farm and Home Outlook Conference in Washington, national agricultural leaders agreed that agriculture is better perpared for the almost certain mobilization task than it was before World War II.

Cleaning Cotton at Gins

By CHARLES A. BENNETT

This is the text of an informal discussion of the subject made by Mr. Bennett at the annual convention of the Oklahoma Cotton Ginners' Association, held Feb. 1-2 at Oklahoma City.

THROUGHOUT THE joint research programs of the engineers of the Agricultural Research Administration and the cotton technologists of the Production & Marketing Administration, the continually changing problems of cotton cleaning involved in harvesting and ginning have necessarily been a major study at the USDA Cotton Ginning Laboratory which operates in behalf of both the producer and the ginner.

Cleaning and extracting difficulties at cotton gins have always been peculiarly regional for obvious reasons, especially because of the methods employed in harvesting the varieties of cotton grown, and the weather conditions that were encountered. The rain-grown, river-bottom and blackland hand-picked cotton regions were radically different in their cleaning problems from those in the high plains of Texas with its sleds and golden burs; and the Oklahoma plains and hills, with different harvesting and ginning conditions, were in still another category.

Out of the scientific studies that ensued at Stoneville and elsewhere in cooperation with state and local agencies, the men of the Extension Services were able to summarize much of the progress in terse and valuable statements such as the present 4-point ginning program that covers the factors which are common to all of the cotton growing areas of the United States. The Ginning Laboratory not only analyzed the types and effects of the entire chain of processing units, but took part in transforming them from the old wooden shells and crude mechanisms to the more standardized and efficient mechanisms of the present time. The industry has departed to a large degree from the shattering, chattering boll crushers to more effective and better balanced cylinders and concave screen cleaners on the one hand, and to superior master and unit bur extractors on the other. Many ginners can easily compare the old-time Rogers cleaners, Streun Bursouts, Hancocks and Allsops to the machines now in use.

It was generally proved by the research studies that cleaner screens with one-half inch meshes were optimum for the major portion of the screening functions, and that the tip speeds of the cylinders ranged between 1300 and 2300 feet per minute when the rates of feed were properly regulated, in order to obtain best results.

Charles A. Bennett is Regional Engineer, Mechanical Processing of Farm Products Division, Cotton Ginning Investigations, USDA, Stoneville, Miss.

Similar progress in the development of master extractors has produced a much more effective spread of the seed cotton across the faces of the carding drums, and has aided in better stripping and elimination of the trash from the cotton streams. There are, of course, constant efforts to improve upon what the industry now has, and it is possible that from some of the latest research into the fundamental principles of cleaning there may arise new methods and better cleaners.

Hand in hand with this mechanical progress in cleaners and extractors, the use of the government drying processes and their adaptation to various forms of dryers have been phenomenal. The general principles of drying, and the operation of dryers are well understood, but their abuse by a few gins—probably unintentional—has led to controversies with other sections of the cotton industry and at times has resulted in price penalties, especially when there were cotton surpluses. The present cotton shortage has reversed a large part of the picture, but the ginning industry must be prepared to handle the proposed 16 million bale crop under unpredictable conditions of all kinds, and hence the drying processes must be preserved and kept in order at the gins.

Since drying is a great aid to cleaning and extracting, the sensible use of this process, within the recommended ranges of temperature, should be adhered to. The Extension 4-point program emphasizes the use, but not the abuse, of drying. It would seem that the drying temperatures should fall between 180 and 220 degrees Fahrenheit; but this is more specifically covered by our cooperating technologists in their discussion of fiber qualities.

Of immediate concern to Oklahoma ginners is the question whether the use of lint cleaners is going to largely cure their cleaning problems, and if not, where does it fit into the Oklahoma picture? To answer this in part, while the Chickasha program is getting underway, necessitates a study of where we now stand in cleaning.

First, it has been established that the extent of the use of conditioning and drying processes is governed by seasonal weather and crop conditions, but that low moisture content of the seed cotton is a primary requisite for the best cleaning results, whether we obtain it by artificial or natural means. In the fiber discussion presented by Mr. Gerdes (See page 9, this issue.—Ed.), this is covered from the fiber technology viewpoint. From the engineers' view, it is evident that adequately dry cotton is essential to the removal of foreign matter in the cleaning and extracting processes, and that this must be regulated by the ginner rather than left to the vague chances of good weather and dry winds in the fields.

With mechanically picked cotton from the mid-season of 1949, the Ginning Laboratory removed some 69 pounds of foreign matter per bale out of a possible 80 pounds that came to the gin with the seed cotton. (Please see Table 1 and Figure 1). The seed cotton passed through a tower drier delivering into a cylinder cleaner; then through a big bur machine and to a finishing dryer-cleaner; then to feeders with heat; then to the gin stands and lint cleaners. The lint cleaners took out about one-seventh of the trash that was removed from the bale, while the cleaning and extracting steps ahead of the ginning took out about 3½ times as much. It did not appear to aid any when the drying temperature was much above 220° F., insofar as the processing effects are concerned. At this drying temperature the usual 3% loss in weight, or about 15 pounds, was encountered from the drying itself. As an indirect consequence, the following processes produced about 1/3 grade improvement.

The Ginning Laboratory also noted that when the lint cleaners were properly adjusted and operated, their average trash removal ranged from 7 pounds for hand-picked cottons to 17 pounds for stripped and pulled cottons, the machine pickings showing about 11 pounds of trash midway between the two extremes. However, some of the rough cottons at Chickasha showed lint cleaner action of 22 pounds or more trash removal per bale. As a consequence of these findings, the extent to which the ginner goes in operating his lint cleaners becomes one of fluctuating markets and final price benefits as much as it does of grade improvements. (Please see Tables 2 and 3.)

It is most difficult under the peculiar market conditions that now exist, to fix the limits as to how far a cotton ginner can go either in the installation of new equipment or in its use if he already has it. Nevertheless, if the 16 million bale crop is to be produced as a war-time effort for our nation, the ginner must be prepared to meet demands for good cleaning, because low grade cottons will not answer all of the needs of the country, and you can count upon it that the discerning buyers and consuming mills will

not be blind in their selections of cotton if the large crop is produced.

For the foregoing reasons, lint cleaners are excellent insurance—an insurance which has a double value because it has a mechanical by-pass. So long as weight of the bale will satisfy the buyer, the by-pass will be extensively used. And when the buyer and the market become more critical, the lint cleaner can be used to suit. Such an insurance as the lint cleaner gives is not confined alone to bale weights nor grade improvements. It may be the deciding factor in the ginner's ability to build up a greater and more profitable volume of ginning.

The present recommendations of the several agencies of the United States Department of Agriculture that are directly concerned with ginning research and extension are as follows: The ginner should be able to provide (1) adequate drying services; (2) up to approximately 24 cylinders of cleaning for opening and finishing stages; (3) a big bur machine or its equivalent for selective operation between the cleaning stages; (4) large extractor-cleaner feeders; (5) gin stands in first class shape; (6) lint cleaners with by-passes, and (7) a good packaging system that will not pour out big-ended or rolling bales.

Table 1. Trash Removed in the Ginning Processes by Mid-Season Tests on Mechanically Picked Cottons at the USDA Cotton Ginning Laboratory. Mid-Season 1949.

Machinery set-up (Sequence of the machinery)	Proportion of Trash Removed (percent)
Opening Cleaner	19
Big Bur Machine	20
Finishing Dryer-Cleaner	14
Extractor-Cleaner Feeders	12
Gin Stand Huller Fronts & Moting	9
Lint Cleaners	12
Total	86

(Weight loss per bale, 69 lbs.)

The cotton ginner of Oklahoma, however, requires a clear picture of what all this means in the matter of power supply for operation. (Please see Table 4.) Lint cleaning takes about 13% or more of the total power; drying requires from 20 to 25% in most gins; cleaning and extracting processes consume from 19 to 25%; and unloading and other miscellaneous items absorb the balance. Estimating 10 horsepower per lint cleaner above other machinery requirements, the Oklahoma ginner must determine whether he can stretch his present power supply by 15% or so.

Table 2. Effects of Drying Temperature on Cotton Cleaning. 1949. Single Stage Drying Through Tower Drier and Cleaner.

Drier Temperature	Moisture Content of Lint (percent)	Grade	Staple 1/32"
No Heat	8.4	SLM+	34.8
140° F.	7.4	SLM+	34.7
180° F.	6.2	M—	34.8
220° F.	5.4	M—	34.7

(Weight loss per bale—15 lbs. at 220°F.)

He is also faced with the problem as to whether he can now obtain lint cleaners if they must be purchased under wartime restrictions, and whether they will pay out on the basis of being an insurance toward greater ginning volumes and more money in his own pocket. The ginnner is certainly entitled to receive pay for every service that he renders. The great Law of Compensation, that supersedes both federal and state enactments, requires that there shall be a mutual profit for both farmer and ginner in these services. Otherwise it becomes only a question of time until the ginner goes broke. In the long run, people who never do more than they get paid for, never get paid for any more than they do—and vice versa.

A special report is being made to you from the Agricultural Engineering Staff at Chickasha, and it should be stated by all of us that the opportunities for joint service with the fine group of men at that Station are appreciated by the Ginning Laboratory[1]. As the work gets underway, it should provide dependable answers to many regional problems that are here puzzling the industry. The suggestions and assistance of the ginners of Oklahoma are earnestly solicited in furthering this research work. The Oklahoma Cotton Research Foundation deserves full credit and approbation for its efforts to establish the facilities at Chickasha, and the Experiment Station and Extension workers from Oklahoma A. & M. College at Stillwater are entitled to adequate recognition for their share in the cotton work of Oklahoma.

Table 3. Weight of Trash Per Bale Removed by Lint Cleaners. 1949 Tests. Series Drying at 180°F.

Type of Harvesting	Trash Pounds	Fly and Waste Lint Pounds	Total Pounds
Delta Hand-Picked	3.8	1.9	5.7
Delta Machine-Picked	7.4	2.0	9.4
Delta Stripped	13.9	3.1	17.0
Chickasha Stripped			22.4
Chickasha Snapped			10.7

Table 4. Distribution of Power Loads in Modern Ginning Outfits. Based on 1949 Readings on 20 Modern Gin Plants.

Items	Proportion of Power for Each Item Gins without Lint Cleaners percent	Gins with Lint Cleaners percent
Unloading	13	12
Drying	25	21
Cleaning & Extracting	22	19
Operating Gin Stands	18	16
Seed Handling	8	8
Trash Disposal	7	5
Condenser, Tramper & Press	7	6
Lint Cleaning		13
Total Horsepower Per Gin	215	241

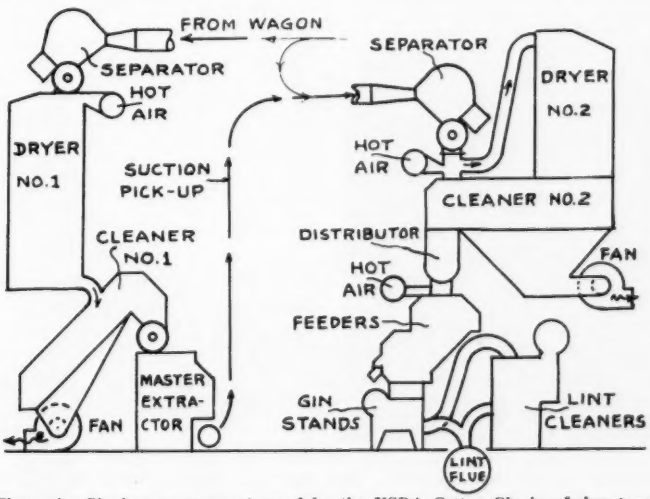


Figure 1.—Ginning arrangements used by the USDA Cotton Ginning Laboratory, Stoneville, Miss., in the cleaning tests on mid-season 1949 machine pickings.

[1]Acknowledgement is made to the staff of the cooperating Cotton Branch of PMA at Stoneville, Miss., and to the Agricultural Engineers under the direction of Mr. Charles M. Merkel, engineer in charge of the main Laboratory at Stoneville, for their contributions of data and suggestions. The Cotton Ginning Laboratory at Stoneville, Miss., and the Cotton Ginning Branch Laboratory at Mesilla Park, N. Mex., are jointly operated by the two Administrations; and pending future arrangements for funds and personnel the cotton technologists of PMA are assisting at Chickasha through official classifications and other fiber activities.

Pakistan Regulates Cotton Industry

Pakistan's Ministry of Commerce has announced the enactment of an ordinance giving the central government power to (1) fix minimum prices for cotton, (2) regulate cotton ginning and processing charges, (3) compel ginners to buy cotton and pay not less than the minimum prices for it, (4) deal in cotton, and (5) register and regulate trading in and movement of cotton.

• *Two Smiths Are Top Winners in*

South Carolina's 5-Acre Contest

■ **FIRST PRIZE of $750 goes to E. N. Smith of Johnston. J. Maurice Smith, of the same community, wins second prize of $275. Crushers are co-sponsor of contest.**

PRIZE - WINNING cotton growers from every section of South Carolina were guests at a luncheon in Columbia on Feb. 3 and won high praise from several speakers for leading the way in showing other growers how to raise acre yields. The winners were from 42 of the 46 counties in the state and were given cash prizes in South Carolina's 1950 county, district, and state five-acre cotton contests.

Grand prize winner was E. N. Smith of Johnston, Edgefield County, whose official five-acre yield was 6370 pounds of lint with staple length of 1⅛ inch. The first prize award was worth $750 to Mr. Smith.

Winner of the $275 second prize in the state contest was J. Maurice Smith, also of Johnston, whose official yield was 5945 pounds of lint with staple length of 1-3/32 inch.

Following are the first and second place winners in the three districts in the state, with names of their home counties and their yields: Upper district, S. F. Sherard, Abbeville, 4745 pounds of lint; Bosie Williams, Greenwood, 4655 pounds. Middle district, P. S. Wise, Richland, 5850 pounds; P. D. Day, Edgefield, 5845 pounds. Lower district, H. Frank Brunson, Clarendon, 5515 pounds; N. B. Loadholt, Allendale, 5260 pounds. First place winners in each district were each awarded prizes of $200. Second place winners received $125.

The state winners and all district winners planted Coker's 100 W.R.

The contests were conducted by Clemson Extension Service and sponsored by the South Carolina Cotton Seed Crushers Association and the Cotton Manufacturers Association of South Carolina. The crushers contributed $3150 to provide a first prize of $50 and second prize of $25 for each county in which 10 or more contestants completed contest demonstrations. The cotton manufacturers contributed the $2000 used as prizes in the state and district contests.

R. M. Hughes of Greer, president of the South Carolina crushers' association, was to award the county prizes but could not be present at the meeting. C. Fitz-Simons, Jr., Columbia, made the awards in Mr. Hughes' absence.

D. W. Watkins, director of the Clemson Extension Service, presided at the luncheon given in honor of the winners and introduced a number of former state prize winners.

H. G. Boylston, Clemson cotton improvement specialist, pointed out that the 1950 enrollment of 1003 contestants was the highest for any of the 10 years he has been in charge of the contest and that the 702 completions in 1950 was one of the highest numbers for any year of the 23 years the contests have been conducted. He said the 1950 average yield of 564 pounds of lint per acre for all contestants was not bad when compared with the 23-year average of 600 pounds of lint per acre, which includes yields made during years when there was very little weevil damage and when other conditions were favorable for high yields.

He reported that every contestant produced cotton with staple one inch or longer with over 95 percent longer than one inch; that 689 of the 702 contestants completing planted Coker 100 W.R., eight Marett's White Gold, and five miscellaneous varieties; and that a study of the results clearly established the value of poison in controlling boll weevils. He said a comparison of yields where BHC-DDT poison was used with yields where no poison was used showed that on 28 five-acre contest fields where no poison was used the average yield was only 381 pounds of lint per acre; on 37 contest fields where one to three applications of poison was made the average yield was 517 pounds; on 76 fields where four to six applications were made the average yield was 571 pounds; and on 57 demonstrations where seven or more applications were made the average yield was 639 pounds of lint per acre.

Joseph Walker, representing the South Carolina membership of the Atlantic Cotton Association, stated that the official record of 8275 pounds of lint produced on five acres by J. Harvey Neeley, Chester, in 1946 was not broken in 1950 and that the sweepstakes prize will be carried over into the 1951 contest.

THESE ARE the state and district winners in the South Carolina 1950 Five-Acre Cotton Contest. Seated, left to right: E. N. Smith and J. Maurice Smith, first and second state winners. Standing, left to right: Bosie Williams and P. B. Day, second place district winners; S. F. Sherrard, H. Frank Brunson and P. S. Wise, first place district winners. N. B. Loadhold, a second place district winner, is not shown.

Rio Grande Valley Helped Some by Needed Rains

Texas' Rio Grande Valley farmers, who have been sitting idly by waiting for rains to give them enough moisture to plant cotton, were helped some this week when light to heavy rains fell at scattered places in the area.

At Santa Rosa an unofficial estimate places the fall at four inches, an estimated two to three inches south of there and three quarters of an inch at LaFeria. Raymondville got an inch and a fraction, Brownsville almost two inches, Harlingen only a quarter. San Perlita, Lyford and Sebastian are said to have received about three inches, and Weslaco and Mercedes slightly under an inch.

USDA field men estimated rain fell over an area about 15 to 20 miles wide through Willacy County, west to Santa Rosa and south through LaFeria. They figured about 100,000 to 150,000 acres ready for cotton received enough moisture for planting as soon as the cold weather is over. Present estimate is that not more than 1000 to 2000 acres had been planted to cotton before the cold weather hit the Valley.

S. F. Riepma to Direct Margarine Association

The National Association of Margarine Manufacturers has announced the appointment of Siert F. Riepma as executive vice-president of the association, succeeding Paul T. Truitt, who has resigned as president of the association to become president of the American Plant Food Council. Riepma's appointment is effective March 1.

Robert G. Spears of the Jelke Division of Lever Brothers, New York, will serve as president of the association without salary.

COTTON INDUSTRY LEADERS are shown above examining a cotton disease campaign poster which is being distributed for display in county agent offices, cotton gins, seed stores and other farm headquarters. National Cotton Council officials active in the campaign are, left to right: Claude L. Welch, director of the Council's Division of Cotton Production and Marketing; Leonard Lett, agronomist; and Dr. C. R. Sayre, chairman, Committee on Cotton Production and Marketing.

Industry Leaders Map Campaign Against Cotton Diseases

An educational program to fight diseases of cotton is being conducted across the Cotton Belt by agricultural leaders. Objective of the campaign is to reduce huge annual losses which cotton farmers suffer because of seed rot, sore-shin or damping-off, angular leaf spot and anthracnose boll rot. Proper treatment with a seed disinfectant can reduce the effects of all these diseases.

The importance of seed treatment is being emphasized by a poster on the subject and by educational releases from state extension services. Because of the huge cotton production goal for 1951 and a below average supply of cotton seed, the treatment of seed is particularly important this year, leaders emphasize.

Argentine Flaxseed Crop Estimate Drops

Argentina's 1950 flaxseed production is now estimated unofficially at 24.6 million bushels, according to C. A. Boonstra, agricultural attache, American Embassy, Buenos Aires. This is a sharp reduction from a previous estimate of 30 million bushels.

Stocks of linseed oil as of Jan. 1 are estimated at 220,000 short tons, and are no longer considered burdensome. Stocks a year earlier were estimated at 330,000 tons. Availabilities for export in 1951 will not exceed the volume exported in 1950, when 144,000 tons of flaxseed and 237,000 tons of linseed oil were exported.

Argentine sunflower seed production in 1951 may reach 1,210,000 short tons, according to unofficial estimates. This would be slightly more than the record output of nearly 1,200,000 tons of two years ago. Production last year has been estimated officially at about 700,000 tons. Stocks are small at present, and sufficient mainly for current domestic requirements. They will be negligible at the beginning of the next crushing year on April 1 in contrast with 110,000 tons on that same date in 1950. This volume permitted exports totaling about 108,000 tons in January-November of last year.

At Atlanta, March 5

Pace Will Address Georgia Ginners

■ **Annual convention will be held at Henry Grady Hotel in Atlanta. Business program will be highlighted by several well-known speakers. Annual banquet big entertainment feature.**

An interest-packed one-day convention is in store for Georgia ginners on Monday, March 5 when the annual meeting of the Georgia Cotton Ginners' Association will be held. Site is the Henry Grady Hotel in Atlanta.

Delegates arriving Sunday will find the registration desk open, and will be guests at a Social Hour in the Variety Room of the Henry Grady from 7 p.m. to 8 p.m. A meeting of Association officers and directors will be held at 5:30 p.m. Sunday.

Warren B. Hodge of Unadilla, Association president, will call the convention to order at 9:30 a.m., March 5. Georgia ginners will receive a warm welcome to Atlanta by the mayor of the city, the Hon. W. B. Hartsfield.

Following appointment of committees, the delegates will hear an address by Stephen Pace, former United States congressman from Georgia and now special counsel for the National Cotton Council. He will be followed on the program by Frederick H. Heidelberg, a member of the Council's Field Service staff.

First speaker on the afternoon business session will be Charles A. Bennett, regional engineer, Cotton Ginning Investigations, USDA, Stoneville, Miss. Another afternoon speaker will be H. L. Wingate, president of the Georgia Farm Bureau and a vice-president of the National Cotton Council.

E. J. Young, of Stevens Industries, Inc., of Dawson, Ga., will act as moderator during an open forum discussion of cotton problems. Participating in the forum will be T. R. Breedlove, Production and Marketing Administration, USDA, Athens, Ga.; E. C. Westbrook, Extension agronomist, Athens; and J. C. Oglesbee, Jr., Extension cotton ginning specialist, Atlanta.

The business session will come to a close with the committee reports and the election of officers.

The annual banquet will be held in the Dixie Ballroom of the Henry Grady Hotel, beginning at 7:30 p.m. Toastmaster will be J. Eugene Cook, attorney general of Georgia. Olin Cooper of Bainbridge, Ga., will be the banquet speaker. Mr. Cooper is a humorist of note and the guests will find his address one of the highlights of the convention.

Wooster Soybean Mill Modernizes Plant

To qualify its meal for higher trade specifications now current, the Soya Processing Co. of Wooster, Ohio, has further modernized its soybean solvent extraction plant by the installation of a Blaw-Knox pressure toaster.

E. C. WOODYEAR (standing), winner of the Madison Parish 5-Acre Cotton Contest, discusses cotton production at the Tallulah Rotary Club meeting at which winners were announced. Others in the picture are Jack McCaffery (left), Tallulah; J. R. Holley (right), farm manager for Mr. Woodyear; and Maxwell Yerger (nearest camera), manager of the Tallulah Oil Mill and president of the Rotary Club.

E. C. Woodyear Wins 5-Acre Contest In Northeast Louisiana

Three bales of cotton per acre were produced by E. C. Woodyear, planter of Mound, La., on his 1950 5-acre cotton contest plot. A check for $100 was presented to him at a recent meeting of the Tallulah Rotary Club, sponsor of the contest. Gins, implement dealers, and the Tallulah Oil Mill teamed up to furnish the prize money for the contest. The Louisiana Delta Council sponsored the contest on an area-wide basis in northeast Louisiana.

Maxwell Yerger, manager of the Tallulah Oil Mill and president of the Tallulah Rotary Club, was chairman of the contest committee from Madison Parish. County Agent Max McDonald, who supervised the contest, collected the yields from the 14 entrants.

Second and third places were won by Fulton Levy and Harry Willis, colored farmers on the M. P. Utz Estate, J. W. Carpenter, operator, also of Mound. Fulton Levy received a check for $50 for producing 1374 pounds of lint per acre. Harry Willis won a check for $25 for his yield of 1272 pounds of lint per acre.

Ten contestants completed the contest with an average yield of 1030 pounds of lint, or two bales per acre. This high yield was made despite the fact that contestants were plagued by rainy weather, grass and cotton insects.

Mr. Woodyear and Mr. Carpenter emphasized the need for good drainage, grass control and insect control in order to produce high yields of cotton in the Mississippi Delta of Louisiana. Both plantations have excellent drainage systems and follow approved insect control practices. They averaged over a bale and a half per acre in 1950.

USDA Sets Long Staple Support at $1.04

Prices for 1951-crop American-Egyptian type long staple cotton will be supported at base rates averaging $1.04 a pound, USDA announced early this month.

The new support program is designed to encourage greater production of longer staple cotton to meet defense needs for special kinds of threads and fibers needed by the armed services. Production of at least 75,000 bales, as compared with this year's crop of about 58,000 bales, of Amsak and Pima 32 varieties has been asked. This type of cotton has not been under the support program, and the average price in January was around 75 cents a pound. Support prices will vary by grade, staple length and location of purchase, USDA said, ranging from 66.9 cents to $1.0645 a pound.

A location differential has been established between the Arizona-California area and the New Mexico-West Texas area to take into consideration transportation costs from the area of production to Southeastern and New England mill points. The purchase rate for the base quality will be $1.038 per pound in the Arizona-California area and $1.042 per pound in the New Mexico-West Texas area.

Purchases will be made from Aug. 1, 1951 through April 30, 1952. To be eligible for purchase, the cotton must be represented by negotiable warehouse receipts issued by warehouses approved by CCC and must have been produced from Amsak and Pima 32 varieties of American-Egyptian cottonseed. This cottonseed must have been "registered" or "certified" by the Crop Improvement Association or other recognized state agency, or covered by a certificate issued by such agency prior to planting, indicating the cottonseed (1) are of the Amsak and Pima 32 varieties, (2) have been re-cleaned, sampled and examined by a designated laboratory and (3) certified by such laboratory as containing not in excess of 2½ percent of fuzzy seed of upland or hybrid character.

Co-op Ginners Re-elect All Officers, Directors

Delegates to the annual convention of the Texas Cooperative Ginners' Association, held Feb. 5-6 at Fort Worth, heard Texas Congressman W. R. Poage discuss the part agriculture must play in the country's preparedness program and were given timely information about many of their problems by other speakers during the two-day meeting.

Among the highlights of the business program were four panel discussions dealing with the national farm program, new developments in gin machinery, the financing of cooperatives, and cooperative education.

Machinery and supply firms and other members of allied industries were hosts to the ginners and their wives at a banquet the first night.

At the annual election held during the final session, all incumbent officers and directors were reelected. The officers are G. E. Sonntag, Frisco, president; R. A. Graham, Greenville, vice-president; and E. M. Cooke, Georgetown, secretary-treasurer. The board of directors consists of the following: J. C. Criswell, Brownfield; E. L. Sowder, Idalou; Ernest Jones, Lamesa; J. S. Varner, Abilene; Jess L. Bell, Rule; C. W. Alverson, Childress; Mr. Sonntag; Mr. Graham; Glee Taylor, Lake Creek; J. E. Cox, Waxahachie; J. S. Wilson, Kerens; H. E. Gainer, Hutto; Oscar Martin, Inez; and Jack Funk, Lyford.

CCC to Buy Extra Long Staple Foreign Cotton

An offer to purchase extra-long staple cotton of better grades now located outside the U.S. has been announced by USDA.

The CCC will purchase cotton for the national stockpile at the request of the Munitions Board and General Services Administration. This offer does not include cotton which is now in the U.S. or extra-long staple American-Egyptian cotton.

Orren S. Leslie Goes With Fairbanks, Morse

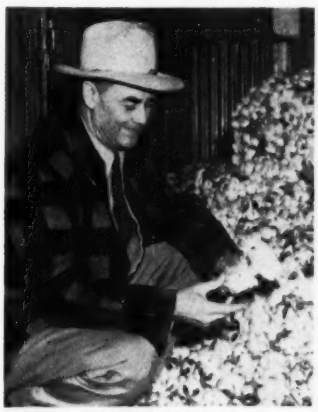
Effective Feb. 1, Orren S. Leslie, formerly with the Electro-Motive Division of General Motors Company, assumed the duties of manager of the Beloit, Wis., Works of Fairbanks, Morse & Co., according to an announcement by Robert H. Morse, Jr., president. He replaces Henry M. Haase, resigned.

Harrold B. Jones Gets OPS District Post

Harrold B. Jones has resigned as executive secretary of the Tennessee Cotton Ginners' Association and has taken leave of absence from his position as ginning specialist with the Tennessee Extension Service to become director of the Memphis district Office of Price Stabilization.

Death Claims I. M. Parrott At Chickasha, Okla., Feb. 5

I. M. Parrott, superintendent of the Oklahoma Cotton Research Station at Chickasha, Okla., died at his home in that city on Feb. 5 following a long ill-



I. M. PARROTT

ness. He was also superintendent of the Southwest Cotton Station at Tipton, Okla., a position he continued to hold when he was placed in charge of the Chickasha station at its establishment in 1948.

Funeral services were held at Chickasha Feb. 7. Tipton, Okla., Masons conducted a service at the graveside. Pallbearers were Ed McVicker, R. M. Holliday, Tom Moran, Jerome Simmons, Bert Strickland and Ed Oswalt, all of Chickasha.

He is survived by his wife, the former Margaret Morley of McAlester, Okla., and three children, Sarah Jane, 10; Mary Nell, 6; and Sam, 6. Other survivors are two brothers, T. W. Parrott of Warren, Ark., and C. F. Parrott of Moscow, Idaho; and a sister, Mrs. Ruth Riley of Phoenix, Ariz.

Mr. Parrott, who was known to thousands of farmers and others in the cotton industry as Polly, was born at New Edinburg, Ark., on Sept. 25, 1903. He attended Arkansas A. & M. College at Monticello and Magnolia, graduating from the latter school in 1923. He entered Oklahoma A. & M. in 1923, studied crops and soils, specializing in cotton, and received a B. S. ddgree in 1926. Polly was a member of Alpha Zeta national honorary fraternity in agriculture and Alpha Gamma Rho social fraternity.

From 1926 through 1932 he was part owner and assistant plant breeder for a seed company at McAlester, Okla., and in 1933-34 was agronomist and horticulturist for the USDA agricultural experiment station at St. Croix, Virgin Islands. Polly was made superintendent of the Tipton, Okla., experiment station in 1937.

Those who knew Polly Parrott and were glad to be numbered among his friends will approve this sentiment from one who worked with him for a number of years:

"The passing of I. M. (Polly) Parrott means, to all who knew him, a loss that is immeasurable. Polly had an irrepressible buoyancy of spirit that expressed itself in good will and cheer to all who came in contact with him. Everyone felt better after being with Polly.

"I. M. Parrott's contribution to agriculture, and to the cotton industry in particular, was not fully appreciated during his lifetime. To those who knew him and his accomplishments, he was wholly imbued with an unselfish desire to serve the farmers and the farming industry.

"We will miss Polly, but are thankful for having known and been associated with him."

Another who knew him well had this to say about Polly: "I know, speaking for all of us here at the (Oklahoma A. & M.) College, that Polly's life was well spent. He gave us good fellowship which made our troubles seem less difficult, and I am sure that if Polly had been asked about it, he would have said with Will Rogers that he never met a man he didn't like.

"Science wise, he was one of the most skillful men I have ever worked with. You couldn't be with him without soon knowing that he knew cotton from A to Z. I don't think there will ever be a time when cotton growers in this and other states will not be benefiting from the work that Polly did. In a sense, every cotton field in Oklahoma is a monument to him."

From our Washington Bureau

By FRED BAILEY
and JAY RICHTER
Washington Representatives
The Cotton Gin and Oil Mill Press


BAILEY


RICHTER

• **"Special Treatment" for Cotton?** — The drive of the powerful "cotton bloc" to get a special exemption from price ceilings for raw cotton has caused considerable uneasiness among non-Southern and general farm organization leaders. Some privately charge the cotton representatives with seeking special privileges.

Some observers think the drive was ill-advised in view of public resentment which has been built up against provisions in the Defense Production Act which prohibit ceilings on farm products below (1) parity or, (2) the highest price between May 24 and June 24, 1950.

The farm groups generally sympathize with the efforts to avoid a ceiling on raw cotton, but they argue that other groups also would like exemptions. They think cotton growers should not ask for specia treatment and that, in doing so, they may bring down further public resentment on the heads of farmers generally.

Some of the general farm organizations remember that during World War II cotton got special treatment in the form of ceiling exemptions, plus higher supports than for any other major commodity. They accuse cotton states congressmen of using their political power to get special treatment.

Many impartial observers think the cotton people have made a serious mistake in objecting so strongly to ceilings in view of current cotton prices more than 25% above parity. The general interpretation is that cotton producers want still higher prices.

• **Price Stabilization Officials' Viewpoint**—Some Price Stabilization officials say privately that they have been forced, for political reasons, to handle the cotton pleaders with kid gloves.

Secretary Brannan, in response to a request by President Truman, has made a report to stabilization officials. His report has not been revealed, but if he followed the thinking of some cotton experts in the Department, he raised no strong objections to ceilings.

The experts estimated that cotton prices would climb 3 to 5 cents a pound with removal of restrictions. They say application of ceilings to finished cotton goods would not prevent further increases in view of the short supply of cotton.

Cotton farmers, it is argued, would not benefit greatly from exemption of raw cotton from ceilings. It is estimated that 85% of the current supply of cotton already has left farmers' hands. Higher raw cotton prices, some reason, simply would drive more customers to synthetic fibers.

The Department cotton people do not agree that higher cotton prices are needed to induce farmers to plant the maximum acreage this year. The size of the crop acreage will be determined more by supplies of labor, machinery and fertilizer than by prices, USDA cotton experts think.

• **Cotton Industry Viewpoint** — Cotton groups, on the other hand, have put up strong, and in many causes plausible, arguments against the imposition of ceilings on raw cotton. They argue that ceilings now would force producers to take all the price risk in marketing of their 1951 crop.

The Belt-Wide Cotton Producers Committee, meeting here last week, asserted that if cotton is selling at the ceiling when picking starts next fall, buyers will wait and thus force growers to absorb all risks and carrying charges. Buyers, the Committee argued, would not buy to meet future needs, knowing that cotton prices could go only in one direction—down.

The Committee likewise pointed out that in order to reach the 16-million bale goal, a considerable amount of lower-yielding, higher-cost land will need to be brought into production. Labor costs, it contends, could easily be double those of 1950. Machinery is up 15 to 16%, fertilizer up 5 to 10% and insecticides up 20 to 36%.

The Committee suggested three "fundamental approaches" for dealing with inflationary prices for cotton and cotton goods: (1) Increased production; (2) ceilings on textiles; and (3) conservation of cotton goods. There was something less than 100% enthusiasm for the third point.

• **Subsidies Again** — The battle over farm prices and ceilings shows signs of becoming a major conflict in the present Congress. Stabilization officials have made no effort to conceal their annoyance over the minimum ceiling provisions in the Defense Production Act. They are putting the blame on farmers for further inflation.

President Truman indicated to some of his Stabilization officials several weeks ago that he might back a move to repeal the minimum ceiling provisions when proposals are made for renewal of the Act expiring next June 30. Congressional leaders, however, told him he wouldn't have a chance of getting such a proposal through Congress.

Price controllers then proposed farm subsidies and the President promptly dragged the Brannan Plan skeleton out of the closet and proposed it as a hokus-pokus remedy for keeping down inflation. Even though dressed in the disguise of anti-inflation panacea, it was quickly recognized by the farm groups.

The word has gone down the line of Administration agencies to prepare for a "spring offensive" to put over farm subsidies. Backers of the proposal are drafting a bill and hope to start hearings sometime around March 1.

Estimates of costs of subsidies, on industrial as well as agricultural products, are vague. Some think costs can be held to $5 billion a year; others think the cost would run to $10 billion or more. Subsidy advocates argue that you've got to spend lots of money to prevent inflation.

• **No More Hoes in Weed Control?** — Agriculture Department researchers think the "man with a hoe" is on his way out of the cotton fields. They say he soon may be replaced by a combination of chemical and mechanical treatments for week control.

Experiments at the Stoneville, Miss., research laboratory showed that best returns in cotton yields and quality came from a combination of three herbicidal oil treatments followed by five flamings.

The oil treatments were made 13, 20 and 29 days after the cotton plants came up. These plus the five flamings gave practically complete control of weeds and grasses, at a total cost of $15.10 per acre.

• **Hearing on Plant Quarantine Regulations**—The Agriculture Department has scheduled a "thorough review" of all federal plant quarantine regulations and orders affecting the importation of cotton and cotton products. A public hearing has been scheduled for March 28 in Washington.

The hearing is preliminary to the contemplated re-issuance as a single document of six regulations or orders relating to the entry of foreign cotton or cotton products into the U. S.

Orders and regulations to be reviewed affect import restrictions on cottonseed, lint, linters, cottonseed oil, hulls, cake, meal, gin and mill waste, other parts of cotton plants and second-hand burlap.

The hearing will explore the value of compression of the fiber as a means of destroying the pink bollworm.

• **REA In a Corner**—Rural Electrification Administration supporters in Washington are hopping mad over what they regard as private power company-inspired efforts to shackle REA cooperatives for duration of the emergency. Rural Congressmen are being deluged with letters and telegrams.

The Defense Power Authority, under the Interior Department, is attempting to grab from REA the authority for allocation of copper, aluminum, steel and other critical materials used in construction of lines and generators. The threat arises in part from the fact that DPA is now headed by two of the nation's avowed foes of electric cooperatives.

Clifford B. McManus, former top official of the Alabama Power Company, heads DPA. Alabama Power has fought REA in the courts for years. McManus now has power far greater than the courts. Serving as his right-hand man, but without title, is J. E. Moore, a big wheel in Electric Bond & Share.

McManus and Moore have drawn an order which, if issued, would require each REA co-op to apply directly to DPA for permission to use any critical materials, even though the materials were on hand and needed to complete work under construction. REA says this would give DPA virtual power of life and death over the co-ops.

Classified Advertising

RATES: Nine cents per word, per insertion. Include your firm name and address in count. Minimum advertisement $2.00. Strictly cash basis—enclose check with order. Write copy plainly.

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FOR SALE—Oil mill equipment including Anderson expellers and French screw presses.—Pittock and Associates, Glen Riddle, Pa.

FOR SALE — Three-section cage French screw presses with 40 h.p. flange mounted motor and tempering bin. Also No. 1 Anderson expellers, belt driven, atractively priced. Inquire—Box 493, care The Cotton Gin and Oil Mill Press, P.O. Box 444, Dallas 1, Texas.

FOR SALE—One—W. S. Tyler Co. Niagara Vibrating Screen style 100, serial number 8198. Two —Richmond Manufacturing Co. Niagara Super Sifters No. 4 x 10, serial numbers 21749 and 21750. All equipment offered subject to prior sale.—Address: Archer-Daniels-Midland Company, 600 Roanoke Building, Minneapolis 2, Minnesota.

FOR SALE — Complete 10-press hydraulic, including practically new Buckeye Former and hydraulic pumps. Priced for quick sale, immediate delivery.—Producers Cooperative Oil Mill, Oklahoma City, Oklahoma.

OIL MILL MACHINERY FOR SALE: Cookers — Pumps — Presses — Cylinders — Heads — Columns — Formers — Accumulators — Hydraulic Pumps — Hot Cake Cutters and Strippers — Cake Bin Feeders — Filter Presses, 32x32 with 49 Plates — Electric Motors, 15 to 150 h.p. with starters — Shaft Coupling and Pulleys — Reitz Disintegrator with 75 h.p. motor — 30" — 36" Chandler Hullers — Small Set Crimping Rolls — 2 Sets Cracking Rolls — 1 Set 60" Crushing Rolls — Post and Pillow Block Ball Bearings — Conveyor Heads and Hangers — Enclosed Right Angle Drives — Elevator Belts, Buckets, Sprockets and Chain — Carver Lint Tailing Beater and Shaker — Brust Grabbot Machines.—Write, wire or phone Sproles & Cook Machinery Co., Inc., 151 Howell Street, Dallas, Texas. Telephone PRospect 5958.

FOR SALE—72-85" cookers, rolls, formers, cake presses and parts, accumulators-pumps, hull-packers, Bauer No. 153 separating units, bar and disc hullers, beaters-shakers, Carver linters, single box balcing presses, filter presses, expellers, attrition mills, pellet machines, pheumatic seed unloader. If it's used in oil mill, we have it. V. A. Lessor and Co., P. O. Box No. 108, Fort Worth, Texas.

PRESS ROOM MACHINERY FOR SALE—Hydraulic Presses—Hydraulic Pump—Cake Former —Cake Cutter—Accumulator—XX Hydraulic Pipe —also Bauer Bros. Attrition Mill. For further details write—Suffolk Oil Mill, Inc., Suffolk, Va.

FOR SALE—Complete hydraulic press room with 5 high cooker, lint room Butters machine, 18 Carver 141 saw-linters, flue system.—Address Box "77," c/o Cotton Gin and Oil Mill Press, P. O. Box 444, Dallas, Texas.

FOR SALE—Delinting equipment for planting seed, Carver 106-141 saw linters.—V. A. Lessor & Co. Oil Mill Machinery, P. O. Box 108, Fort Worth, Texas.

FOR SALE—All in excellent condition: 3 No. 1 Anderson Expellers, complete with one 18'x12" cut flight precooker. 3 expeller mounted cookers. Foots and oil drag elevator and variable feeders all driven as one unit.—Write Box "A" c/o The Cotton Gin and Oil Mill Press, P. O. Box 444, Dallas 1, Texas.

Gin Equipment for Sale

FOR SALE—Still have some very attractive buys left in good well located gins, both in the Rio Grande Valley and West Texas. Sold two good ones last month and getting more inquiries every week. If you have a good gin for sale, or wish to buy a good gin it will be to your advantage to contact me at your earliest convenience.—M. M. PHILLIPS, Phones—3-1171 or 3-3914, P. O. Box No. 1288, Corpus Christi, Texas.

FOR SALE—Approximately 3,000 new 10" gin saws 2-3/16 bore.—Peerless Manufacturing Company, Fort Valley, Georgia.

FOR SALE—One 5-80 saw Murray gin outfit with glass front gins, good shape, Mitchell super units, after-cleaners and super-jems, Murray single conveyor distributor, Murray steel-bound up-packing press complete—Mitchell equipment two years old. One 4-80 saw Murray glass front gin outfit with Mitchell super units, Murray double conveyor distributor, less transmission and press. One 3-80 saw Murray gin outfit with Mitchell super units, Murray double conveyor distributor, less press and fans. This outfit has run one season and has grinned less than 600 bales.—W. L. Gladish, Lawrenceburg, Tennessee.

Government type dryers delivered and erected in your gin plant. See advertisement on page 34, this issue.—Service Gin Co., P. O. Box 21, Ville Platte, La.

FOR SALE—Some of our special bargains: AIR BLAST GINS, direct connected type: Three 80-saw Murray steel, old style. Four 80-saw Lummus "Automatic" ball bearing, with roll dump levers. Eight 80-saw Munger ball bearing. Five 80-saw Gullett. Three 70-saw Murray steel 4" mote conveyor. Three 70-saw Murray steel 4" mote conveyor. Four 70-saw Pratt, steel frame. Four 70-saw Munger, iron frame, good order, $100.00 each. BRUSH GINS: Four 80-saw Murray old style, steel, with ball bearing brushes, almost new and good saws and ribs. Five 80-saw Munger, iron frame, I.S. & B.D. Four 70-saw Pratt, wood frame, excellent condition, $100.00 each. PRESSES AND OTHER ITEMS: One Continental "Paragon" heavy duty steel bound press, with ram and casing, very good. One good sound Continental old style press with fully steel bound top doors hinged in steel, $500.00 at location. One 72" square type Continental steel "up draft" condenser with dust flues. Can be changed to down draft if wanted. One Continental vertical triplex hydraulic pump with one pulley for electric drive. Two rebuilt Beaumier 4-plunger belted hydraulic pumps. Several wood housing bucket and screw type seed elevators. One steel bucket elevator, 35", 40" and 45" rebuilt fans. All sizes and types new Phelps fans in Waco stock. New and reconditioned hydraulic rams and casings, conveyors, pulleys, belting and transmission equipment. New "Government type" Tower Dryers, Gas and Butane heaters, etc. "Tell us your needs and we may both profit."—R. B. Strickland & Co., 13-A Hackberry St., Tel. 2-8141, Waco, Texas.

FOR SALE—one 5 section Mitchell steam radiator, one Lummus 50" all steel condenser. Both in first class condition.—Espy-Griffin Gin and Warehouse Company, Headland, Ala.

FOR SALE—Two almost new installations of 6 cylinder 72" after cleaners for 10' O. H. Continental bur machines. One above floor set of lint flues, complete with transitions, and supports for Continental gin stands. — Farmers Cooperative Gins, Munday, Texas. Phone 25.

FOR SALE—Modern 4-80 Continental gin plant, big territory, Bailey County, Texas. New special Super Mitchells, modern managers home. Price $42,000, some terms.—N. B. Embry, Littlefield, Texas, Rt. 2.

FOR SALE—A good Murray steel bound press, including an all steel Murray packer ram and casing, steel bottom and top sill, new hydraulic pump with 10 h.p. motor. Priced $1,000.00. Also a 14x15 Skinner counterflow steam engine in perfect condition for $500.00. Write—Post Office Box 1567, Muskogee, Okla., or telephone Jimmy Hall, 8154, Muskogee, Okla.

FOR SALE—We have for sale the following gin equipment: 4 - Munger - Double Rib-Huller-Brush Gins #HG-103 RA-Direct Connections with Reclaimer Breasts. 4-Double X-Huller-Cleaner-Feeders Model D. One Continental conveyor distributor, practically new. One pair Howe seed scales. One #40 Continental fan, and 1 super blast fan. One practically new lint flue Model C-Continental gins. Plenty of shafts, line shaft, conveyors, and air lines. All of this equipment is in good condition and will sell all or any part.—J. D. Davis Gin and Feed Mill, Leonard, Texas.

FOR SALE—Five complete gins: Two with all steel buildings and modern machinery. Three without buildings with reasonably modern machinery. Priced very reasonable.—Call or write Jimmy Hall, manager, Cotton and Gin Department, Muskogee Cotton Oil Mill, Muskogee, Okla. Telephone 8118, or P. O. Box 1567.

FOR SALE—5-80 model "E", I.S. and B. Gins in excellent condition with roll-out roll boxes and lint flue. One 70" Hardwicke-Etter stub 11-shelf tower drier, three way by-pass and steel supports. One 10-section Lummus thermo cleaner. Two Mitchell burners. Two Continental hot air vacuumm boxes. One 3-80 Continental oval steel side discharge condenser. Two Wichita steel 50" separators. One Continental 50" steel separator. One 38" steel Stacy separator. 4-66" Super Mitchells with flat belt drive. One Continental 50" 8-cylinder steel inclined cleaner. Two 5-cylinder Hardwicke-Etter type I steel cleaners with three way by-pass and hot air transition for drier if wanted. One long and one short all steel by-pass conveyors for 2-10' Hardwicke-Etter bur machines and 50" cleaners. 4-80 saw Hardwicke-Etter huller feeders. 5-80 saw A.B. all steel Cen-Tennial gins, 1-80 saw Cen-Tennial all steel brush gin. One slightly used 34' Howe wagonscale with plank deck. One 24' Howe wagon scale with plank deck. Six new Fairbanks-Morse engine heads. New Climax butane or gas engines. Bagging and ties.—Bill Smith, Box 694, Phones 9626 and 7847, Abilene, Texas.

FOR SALE—Four steel bound Continental Paragon Presses with channel iron side supports, and counter-balanced doors. One Cameron all steel tramper. One Murray tramper, and one Murray three-plunger pump. Two Beaumier four-plunger pumps. Four 66" standard Mitchells with flat belt drive. Five 66" convertible Mitchells with flat belt drive. Five 60" Hardwicke-Etter huller-feeders. Five 80 saw Murray gins with glass fronts and lint flues. Four 80-saw Continental model "C" all steel brush gins with lint flue. 5-80 D.C. — A.B. Continental model "C" gins, new saws, ribs, rib rails, and lint flue. One 6-cylinder air line all steel cleaner. Two center feed all steel 12' Murray bur machines. Two 10' Hardwicke Etter wood bur machines. One 14' Hardwicke-Etter wood bur machine rebuilt 2,500 bales back with 3-cylinder all steel 14' after cleaner. Two 14' Hardwicke-Etter wood bur machines. Several gins at present location as well as to be moved. Several Skinner steam engines and boilers, or what do you want to buy or to trade.—Bill Smith, Abilene, Texas, Box 694, Phones 4-9626 and 4-7847.

FOR SALE— Modern gin in good operating condition located in north Texas containing 5-80 saw gins, H-E cleaning machinery and dryer, Le-Roi gas engine, good buildings, average ginning during past 4 years exceeded 2500 bales. Owner retiring.—Write Box "TA" c/o The Cotton Gin and Oil Mill Press, Box 444, Dallas 1, Texas.

BUR EXTRACTING and cleaning machinery—Four 66" Mitchell pressed steel, ball bearing "double decked" flat belt extractor. Four 66", 1932 model pressed steel ball bearing Mitchells. Five 80-saw model "H" triple saw Mitchells. One 58" cast iron F.E.C. ball bearing Mitchell. Five 80-saw Murray V-belt Bleweeds. Three 60" Continental steel "double X", model "D" extractors. Two 60" Continental steel "triple X" model "D" extractors. One 14 foot Hardwicke-Etter wood frame extractor with inlet and return conveyors, excellent. One 14 foot Stacy steel three cylinder incline ball bearing after cleaner. One 10 foot Hart steel three cylinder incline ball bearing after cleaner. Two Murray steel "Quad" cleaners. Two five cylinder Hardwicke-Etter wood incline cleaners. Two 52" Murray steel type "MS" Separators. Two 50" Hardwicke-Etter wood separators. New "Government type" Tower Dryers, gas and butane heaters, etc. Tell us your needs and what you have for sale or trade.—R. B. Strickland & Co., 13-A Hackberry St. Tel. 2-8141, Waco, Texas.

FOR SALE—Complete 5-70 saw Lummus outfit with 165 h.p. Bessemer natural gas engine, 40x70 two story frame building. All $4,000.00. Will sell machinery separately. Co-ops put me put of business.—Gus Hartman, Rockwall, Texas.

SALVAGING GIN—Many good useful parts for sale, including one all steel frame fireproof gin building, four excellent Continental gin stands, a practically new burring machine, shafts and pullies, belts, saw filer, and platform trucks.—George Minor, Tullahassee, Okla.

FOR SALE—To be moved. One of most modern all steel gin plants in eastern Okla. 4-80 air blast Lummus gins. Super Mitchells and dryer. Large bur extractor. Most machinery ball bearing. Le Roi engine. Large all steel gin building. Gin house 80x28x20. Howe scale 30—30,000 lbs. cap.—Write Box "OK" c/o The Cotton Gin and Oil Mill Press, Box 444, Dallas 1, Texas.

FOR SALE—To be moved: 2-complete 4-80 saw Murray all steel gin outfits with up-packing all steel presses and steel condensers, less power; gin stands equipped with quick roll dumping device and glass panel fronts. One battery equipped with Mitchell 60" standard units, stub tower dryer and heat; in Mitchells; other battery has Mitchell 60" super units with heat; both have Fairbanks seed scales. These outfits are in excellent condition and priced right for quick sale.—Taylor Oil and Peanut Mills, Division of Georgia Peanut Company, Moultrie, Georgia.

PUBLIC SALE — Hadden Gin property, Avera, Georgia. 4-stand, 80 saw Continental Gin. Electrically driven. Complete with motor and all equipment. 250 to 300 ton capacity, heavy constructed seed house. Nice office building with all office equipment. One Fairbanks-Morse platform scale, Code 12302-N with one Type C-30-12047 cabinet dial and printomatic unit. 5-ton capacity, 50 ft. x 10ft. All in good condition. To be sold at courthouse, Louisville, Georgia, 11:00 a.m., Tuesday, March 6, 1951. Terms: cash. Address all inquiries to: W. Wright Abbot, Attorney, Louisville, Georgia.

FOR SALE—4-80 saw Murray complete gin with 6" mote conveyors, less power and building, suitable for picked cotton at a bargain. One double battery Murray of 4-80 each with new fronts and double extraction with or without building or any part. Also to be moved one 5-80 Continental A.B. gin complete with or without building, electric power, double extraction, with Hardwicke-Etter overhead extracting and cleaning equipment, Mitchell huller feeders, tower type drier.—Bill Smith, Box 694, Phones 9626 and 7847, Abilene, Texas.

FOR SALE—Well equipped 5-80 Murray gin plant in most productive cotton section of Texas plains. All facilities. Anticipated ginning '51 over 5000 bales. Bargain price for immediate sale only $57,500.—Write Box J. K. c/o The Cotton Gin and Oil Mill Press, P. O. Box 444, Dallas 1, Texas.

FOR SALE—Complete gin plant, also incomplete plant, 6½ room home, 30 acres land.—Write for details. Lowake Gin Co., Lowake, Texas.

Equipment Wanted

WANTED TO BUY—Good used gin machinery of any kind.—Bill Smith, Abilene, Texas.

WANTED—70" Hardwicke-Etter separator and big reel Murray drier. Must be in first class condition and worth the money.—Floyd Weeks, Wills Point, Texas.

WANTED—Late model 4 or 5-80 Lummus gins with steel building. Give location, complete description and price.—Jenkins Bros. Gin Co., Moultrie, Ga.

WANTED—One L.E.F. machine for 70 saw gin either 1943 or 1944 model.—Eckhardt Gin Co., Yorktown, Texas.

WANTED—5-70 conveyor distributor; one 70-saw Murray air blast gin stand and one 6" mote conveyor.—James Buske, Shiner, Texas.

Personnel Ads

WANTED—Ginner capable handling new Murray-Mitchell gin and office man with good accounting experience. Year round job. Give reference and experience.—Box 548, Artesia, New Mexico.

WANTED—Experienced cotton gin operator to help move gin to our location. Have permanent job for good man in cotton gin and oil mill.—Curtis Peanut Co., Ind., Pearsall, Texas.

MANAGER or assistant manager available to independent or cooperative oil mill. Fully experienced in all phases of oil mill administrative procedures—buying, selling, operations. Young, aggressive veteran with family. All replies held in strict confidence.— Write Box "BY" c/o The Cotton Gin and Oil Mill Press, P. O. Box 444, Dallas 1, Texas.

Power Units and Miscellaneous

FOR SALE—50 h.p. natural gas and gasoline M-M motor, 125 h.p. 3 cylinder Tips engine with clutch pulley, 42' of 17"x7 ply drive belt. 4-80 saw Cen-Tennial air blast gins—saws used one year, A-1 condition. Ginned less than 16,000 bales in all.—Boedeker Gin, Taylor, Texas.

SCALES FOR SALE—1-50 ton 50' x 10' with type registering beam; 1-20 ton 34' x 10' with full capacity beam; 1-10 ton 18' x 9' with full capacity beam. Howe ball bearing motor truck scales. All new. Immediate delivery.—Dillon Scale and Equipment Co., Inc., 3907 Elm Street, Phone Victor-2511, Dallas, Texas.

FOR SALE—Industrial lift tractor with air cooled engine, fork lift, rubber tires. 1500 lbs. capacity. Reasonably priced.—Swift and Company Oil Mill, P. O. Box 1735, Houston, Texas.

ALL STEEL BUILDINGS for cotton industry—warehouses, cottonseed houses and gin buildings.—Marvin R. Mitchell Construction Co., 1220 Rock Island, Dallas, Texas. Phone RA-5615.

POWER—One model RA4S, 6-cylinder LeRoi, 140 h.p. power unit. One model RX1, 125 h.p., 4-cylinder LeRoi power unit. One 25-35 h.p. Waukesha power unit. Electric Motors: One 60 h.p., 2300 volt slip-ring, with controls. One 20 h.p., 2300 volt slip-ring with controls. One 50 h.p. G.E., 220 volt 1200 rpm squirrel cage, in Waco stock. New and rebuilt motors in a large range of sizes available for prompt shipment. Also one 80 h.p. model 32 cold starting Fairbanks-Morse diesel, reconditioned, on testing block, Waco stock. One 100 h.p. Fairbanks-Morse semi-diesel engine, on foundation with clutch and stub-shaft, $500.00.—R. B. Strickland & Co., 13-A Hackberry St., Tel. 2-8141, Waco, Texas.

FOR SALE—Twin City, 6 cylinder, 8x9 model NE natural gas engine with nine belt V-Drive and starter. Good condition. — Box 416, Grandfield, Oklahoma.

FOR SALE—International Cotton Picker. Picked 11 bales. $7500.00. Write Box "T", c/o The Cotton Gin and Oil Mill Press, P. O. Box 444, Dallas 1, Texas.

LEROI ENGINES—We deliver "turn-key" cotton gin power installations. Our engineers prepared to install new or rebuilt LeRoi engines in our territory, ranging from 225 h.p. to 450 h.p. We furnish cooling tower and coils, water and gas line pipe, sheaves, belts—now ready for immediate delivery. Scheduled for delivery in April, May, June and July, new LeRoi power engines. We maintain a complete stock of LeRoi engine replacement parts and have expert service men on duty 24 hours.—Nortex Engine and Equipment Company, LeRoi Engine Distributors, P. O. Box 355, Wichita Falls, Texas.

FOR SALE: 100 h.p. Fairbanks-Morse 2 cylinder diesel engine. Good running condition—cheap—Call or write City Manager, Arlington, Texas. Phone AR4-6261.

FOR SALE—One 100 h.p. Westinghouse Electric, slip ring motor, with all starting equipment. Good operating condition—$750.00. One 10 h.p. motor, (GE) with starting switch. Good condition. F.O.B. Bloomburg, Texas—$250.00.—J.C. Baker, Box 21, Bloomburg, Texas.

FOR SALE—Allis Chalmers tandem compound engine, 14x30x36, with Wheeler condensing equipment. One Heine 300 h.p. water-tube boiler—175 lbs. working pressure. — Write, wire or phone Sproles & Cook Machinery Co., Inc., 151 Howell Street, Dallas, Texas. Telephone PRospect 5958.

FOR SALE—Two rebuilt 8 x 9 - 4 cylinder Twin City engines. One rebuilt 8 x 9 - 6 cylinder Twin City Engine. Sales, parts and service on all sizes of Twin City engines.—Fort Worth Machinery Company, 1123 East Berry, Fort Worth, Texas.

North Carolina Contest

Winner Makes Two Bales Per Acre

A Cumberland County farmer who produced more than two bales of lint cotton per acre has been awarded first place in the North Carolina 5-Acre Cotton Contest for 1950.

J. R. Bullard, Wade, and his tenant, C. W. Mathews, harvested 5,600 pounds of lint on five acres, averaging 1,120 pounds to the acre. They used an eight-row tractor duster and applied 12 dustings of benzene hexachloride for boll weevil control.

Runner-up in the contest was W. D. Goodnight, Concord, Cabarrus County. Goodnight and his tenant, Ed Moss, produced 1,057 pounds of lint per acre, or 5,285 pounds on five acres. They treated their crop with nine applications of benzene hexachloride.

First prize in the competition was $800, and second prize was $400. Prizes of $300, $200 and $100 were awarded to the three top growers in each of three districts. All prize money was donated by the North Carolina Cottonseed Crushers Association. The contest, conducted by the State College Extension Service in coöperation with various agricultural agencies, was supervised by J. A. Shanklin, extension cotton specialist.

First, second and third place district winners were: District 1—Ralph Sigmon, Catawba County; J. A. Miller, Davie County; J. T. Parker, Anson County. District II—G. E. Bullard and Paul Roberson, Cumberland County; Wilkinson Farm, Sam Jones, Scotland County; J. A. McLamb, Cumberland County. District III—Curtis Lewis and Eugene Solomon, Halifax County; Bryant Bottoms, Warren County; George and Richard Alston, Halifax County.

P. O. Davis Heads Southern Agricultural Workers

P. O. Davis, director of the Alabama Extension Service, Auburn, was elected president of the Association of Southern Agricultural Workers at the closing session of that organization's annual meeting at Memphis Feb. 5-7. He succeeds Frank S. Chance, vice-director of the Tennessee Experiment Station, Knoxville.

C. N. Shephardson, dean, College of Agriculture, Texas A. & M. College, College Station, was named vice-president and B. B. Jones of New Orleans, La., was reelected secretary.

• A fertile soil is one that is well drained and well supplied with organic matter, nitrogen and minerals.

TIMELY TIPS

On Livestock Feeding

• **Winter Isn't Over** — This is not a weather forecast—just a reminder to cattlemen that February is usually the hardest month for cattle. On most farms and ranches supplemental feeding is more important now than at any other time.

Louisiana Extension Service Animal Husbandman W. T. Cobb suggests that cattlemen have found it more economical to feed now than to try to feed starved cattle later. He says, "Reasonably good hay supplemented with one to two pounds of *cottonseed meal or cake* does a good job of carrying cattle through the winter. It is hard to replace a high protein feed for winter care."

• **More Profit From Hogs**—The USDA says that it is more economical to send a ton of pork to market in 10 pigskins than in eight. It all means that you make more profit if you market hogs at about 200 pounds instead of 250 pounds. After hogs reach 200 pounds, it takes more feed to make a pound of gain.

You may get the extra pigs to feed by practicing better management and feeding of bred gilts and sows. When bred sows are fed balanced rations they farrow pigs which are healthy and have a better chance to live to market age.

Another way to save feed costs and make more profit is to feed pigs a ration with enough good protein. Experiments have shown that, when used to balance a ration for pigs, a pound of protein saves five to six pounds of grain.

A good protein supplement for either bred sows or fattening pigs is: 40 pounds of cottonseed meal, 40 pounds of meat scraps and 20 pounds of alfalfa leaf meal.

• **Smaller Milk Check in February?** — There are fewer days in February for cows to produce milk but there are also fewer days to pay feed and labor bills, so it's OK if milk checks are smaller because of this.

But if milk production goes down because of frozen water troughs and unbalanced rations, profits are being lost. Cows must have plenty of water to produce milk. A water trough heater has paid many times its cost on many dairy farms.

Unbalanced rations are more likely to occur this month than any other. The protein content of dry grass and common roughages is extremely low. Drouth in the Southwest and cold weather in the Southeast have reduced pasture grazing. Now is the time to check rations to see if they contain enough protein. When non-legume roughage is the principal roughage fed milk cows, the grain ration should have 18 to 20 percent protein. It is easy and economical to increase the protein by adding cottonseed meal.

• **Lack of Phosphorus May Limit Cattle Gains**—The phosphorus content of most dry forage is very low at this season. The Montana Experiment Station recently reported that even a slight phosphorus deficiency may drastically reduce daily gains and greatly increase feed requirements. Gains of steer calves were trebled and the amount of feed needed to produce 100 pounds of gain was reduced 1,370 pounds by adding a very small amount of phosphorus to the ration.

Cottonseed meal is high in phosphorus content. When you feed cottonseed meal or cake, the phosphorus it contains may make the difference between profit and loss in cattle raising.

• **Dr. G. Bohstedt**—noted Wisconsin feed authority, said, "Farm grains should be balanced with the necessary protein concentrates in order to have them do an efficient job. Whatever carbohydrate material on being digested is not in some degree matched with protein, is wasted by the animal."—*Educational Service, National Cottonseed Products Association.*

Extension Service Helps Millions of Families

More than four and one-half million U.S. farm families received educational help from the Cooperative Extension Service in 1949 in improving their methods of farming and homemaking and meeting a variety of other problems of rural life, according to M. L. Wilson, director of Extension Work, in his annual report to the Secretary of Agriculture.

In addition to farm people, more than two million nonfarm families received educational help from the Extension Service that enabled them to do a better job in gardening, preserving food, clothing the family, and other fields of family living.

Fats and Oils Situation:

Output to Hit New Peak in 1950-51

• **Domestic Output to Reach New Peak in 1950-51**—Production of fats and oils, including the oil equivalent of domestic oilseeds exported, in the year which began Oct. 1, 1950 probably will be slightly greater than the record output of 12 billion pounds a year earlier. Output of lard, tallow, and greases will increase moderately.

Flaxseed production was down 11 percent last year, but with a large carryover of old crop flaxseed, flaxseed crushings and output of linseed oil will be at least as large as in 1949-50, when 725 million pounds were produced.

Production of vegetable oils (including oil equivalent of exported domestic oilseeds) may decline slightly. Crop conditions Dec. 1 indicated that the 1950 cotton crop is almost 40 percent smaller than a year earlier, slightly more than offsetting the effect on oil supplies of an increase of 24 percent in the soybean crop and a nine percent increase in the peanut crop. Output of butter is expected to decline in 1950-51.

The 1950 fall pig crop numbered 41 million, nine percent larger than a year earlier and the largest fall pig crop since 1943. The 1950 spring and fall pig crops totaled 101 million, five percent more than a year earlier and also the most since 1943. As a result, production of lard and grease in the year which began Oct. 1, 1950 will total substantially more than a year earlier.

• **Prices of Fats and Oils Up in December**—Continued strong demand for tallow, grease and lard brought increases of 15 to 20 percent in prices of these fats in early December, despite a high level of output. Prices of domestic edible vegetable oils also advanced in early December, with the price of soybean oil increasing the most. Prices of domestic fats and oils in the latter half of December and the first week in January remained relatively unchanged. Later, prices of domestic oils and fats rose further.

The price of tung oil increased sharply in the latter half of December, following the "freezing" by the U.S. government of Chinese dollar assets in the U.S. and the announcement by Communist China of an embargo on all exports to the U.S. Prices of other fast-drying oils also rose.

The index number of wholesale prices of 26 major fats and oils (excluding butter) in mid-January was about 230 (1935-39 equal 100) compared with 217 in December, 199 in November, 185 in October and 144 in Jan. 1950.

• **CCC Purchases and Sales of Peanuts Drop**—CCC purchases of 1950 crop peanuts through Dec. 31 totaled 299 million pounds (farmers' stock basis) compared with 547 million pounds a year earlier. Purchases of farmers' stock peanuts (mostly "excess oil peanuts") were more than double a year earlier, when there was no program for "excess oil peanuts." Purchases of shelled #2 peanuts through December were far below a year earlier. Last year there was no limit on sales of #2 shelled peanuts by mills to CCC. For the 1950 crop, however, CCC will purchase from a mill only specified quantities of the various types of peanuts for every 1,000 pounds of #1 grade peanuts sold by the mill for edible purposes or seed.

• **Less Flaxseed Placed Under Support Programs**—CCC reported that as of Nov. 30 0.7 million bushels of 1950 crop flaxseed had been placed under support programs. This is two percent of the estimated production. A year earlier, 7.9 million bushels, 18 percent of the crop, had been placed under support programs. Prices received by farmers for 1950 crop flaxseed have been substantially higher than the support price of $2.57 per bushel, farm basis. According to preliminary estimates, prices to farmers for flaxseed this season will average at least $3.20 per bushel.

Camera Flashbacks to Oklahoma Ginners' Meeting, Oklahoma City, February 1-2

■ **TOP PHOTO—Outgoing President Amos L. Kobs, Elk City (left), chats with the Oklahoma Cotton Ginners' Association's new president, Arch Rollow, Wynnewood. Other officers for 1951 are E. A. Hohman, Lone Wolf, vice-president; and Horace Hayden, Oklahoma City, re-elected secretary-treasurer.**

■ **CENTER PHOTO—The 4-H boys shown here were introduced to the delegates at the annual banquet as having done outstanding work on cotton projects during the past year. Left to right: Ray Howard, Chickasha; Warren Nixon, Keota; Charles Patton, Keota; Virgil Novy, Anadarko; Robert Miller, Verden; Royce Lee Porter, Carter; Darrell Watts, Altus.**

■ **BOTTOM PHOTO—Scene at the registration desk in the lobby of the Skirvin Tower Hotel. Six-below-zero weather cut down on the attendance, although several hundred delegates braved the cold, ice and snow to attend the meeting.**

Size of Spray Nozzle in Relation To Cotton Insect Control

By H. F. Miller and J. C. Gaines*

Effective control of cotton insects has been obtained from several insecticides when applied as sprays. Information is needed regarding the amount of spray to apply per acre to give adequate control. The time and labor required to handle excessive amounts of water when using large nozzles make spraying expensive.

Tests were conducted during 1950 to determine the effectiveness of toxaphene and toxaphene-DDT sprays for cotton insect control when applied with different quantities of water per acre. Four treatments were included: a check or untreated plat; hollow cone nozzle delivering 1.8 gallons of spray per acre; hollow cone nozzle delivering 5.4 gallons of spray per acre; and hollow cone nozzle delivering 13.5 gallons of spray per acre. These rates were obtained with three nozzles per row when the sprayer was operated at 60 pounds pressure and at a tractor speed of four miles per hour. One nozzle per row was used on the first two applications, two nozzles on the third application and three nozzles on the seven later applications. The total quantity of water applied during the first three applications was in proportion to the number of nozzles per row.

Toxaphene was used in the first five applications while toxaphene-DDT (2-1) mixture was used on the remaining five applications. Comparable dosages of these insecticides were used on all treated plats regardless of the quantity of water applied per acre.

The plats were arranged in randomized blocks. Each treatment was replicated four times. Each plat was 12 rows wide and of sufficient length to make one-tenth acre. The seasonal averages of boll weevil infestation, bollworm injury and yields following spraying are shown in Table 1.

The three treatments delivering different quantities of spray per acre containing either toxaphene or toxaphene-DDT mixture were equally effective for thrips, boll weevil and bollworm control. Effective control of cotton insects was obtained with cone nozzles delivering different quantities of spray ranging from 1.8 to 13.5 gallons per acre, so long as the proper amount of insecticide was used. The spraying operations using nozzles delivering relatively small amounts of spray were the most economical because of the time and labor saved in not having to handle large quantities of water.

*Respectively, assistant professor, Department of Agricultural Engineering, and professor, Department of Entomology, Texas Agricultural Experiment Station. Reprinted from Progress Report 1312.

Table 1. Boll weevil infestation, bollworm injury and yields following spraying with different size nozzles

Treatment	Boll weevil infestation	Bollworm injury	Yield, pounds of seed cotton		
	Percent punctured squares	Percent injured bolls	Per plat	Per acre	Gain over check
Check	36.67	14.50	164.0	1640	
1.8 gal. per acre	19.29	2.15	219.8	2198	558
5.4 gal. per acre	19.04	1.60	225.2	2252	612
13.5 gal. per acre	19.67	1.90	221.8	2218	578
Min. dif. required for significance	9.86	4.05	28.8		

Allis-Chalmers President, Walter Geist, Dies

Walter Geist, 56, president of Allis-Chalmers Manufacturing Co., Milwaukee, Wis., since 1942, died Jan. 29 following a heart attack two days earlier.

Geist joined Allis-Chalmers as office boy at the age of 15. He was advanced to general sales manager in 1933 and became vice-president and general representative three years later. Survivors include his wife; a daughter; and a son, Kenneth Geist, who is director of purchases for Allis-Chalmers.

Camera Flashbacks to the Annual Convention of the Carolinas Ginners' Association, Held at Bennettsville, S. C., January 30-31

■ TOP LEFT: The 1951 officers of the Carolinas Ginners' Association. Standing, l. to r.: J. F. McLaurin, Bennettsville, S. C., president; Louis G. McGill, Bennettsville, executive secretary. Seated, l. to r.: Frank M. Wannamaker, St. Matthews, S. C., vice-president; Myres W. Tilghman, Dunn, N.C., vice-president.

■ TOP CENTER: Jay C. Stilley, Dallas, Texas, executive vice-president, Texas Cotton Ginners' Association, addressed the convention Jan. 31.

■ TOP RIGHT: L. to r.: J. F. McLaurin; Neville Bennett, Clio, S.C., farmer, who spoke Jan. 31; Bob Amis, Memphis, Tenn., National Cotton Council, also a Jan. 31 speaker.

■ CENTER LEFT: Perry E. Moore, president of the New York Cotton Exchange, addressed the convention Jan. 30.

■ CENTER RIGHT: The men shown here are directors of the Association. Reading l. to r. they are: Clyde E. Upchurch, Jr., Raeford, N. C.; Ralph Elliott, Shelby, N. C.; J. W. Robbins, Scotland Neck, N. C.; Frank M. Wannamaker, St. Matthews, S. C.; W. E. Ashhcraft, Monroe, N. C.; Forrest S. Crowder, Lattimore, N. C.; J. F. McLaurin, Bennettsville, S. C.; E. N. Sitton, Pendleton, S. C.; Myres W. Tilghman, Dunn, N. C.; O. L. Edwards, St. Charles, S. C.; G. T. McLees, Westminster, S. C.; Talley E. Smith, Rowesville, S. C. Directors not shown are Ben E. Gramling, Gramling, S. C.; Carl T. Hicks, Walstonburg, N. C.; and Wilfred R. Cato, Emporia, Va.

■ BOTTOM LEFT: These men participated in the insect control panel discussion the second day. L. to r.: L. M. Sparks, South Carolina Extension Service, Clemson; V. K. Quattlebaum, Edisto Experiment Station, Blackville, S. C.; L. C. Fife, Pee Dee Experiment Station, Florence, S. C.; George D. Jones, North Carolina Extension Service, Raleigh; Geo. T. Ashford, Red Springs, N. C., moderator. Mr. Ashford is a past president of the Carolinas Ginners' Association.

■ BOTTOM RIGHT: Guests at the annual banquet verge on the hysterical while one of the country's oustanding humorists "addresses" them.

Fractionation of Cottonseed Meats

(Continued from Page 16)

and the on-60, -80, or -100-mesh material was returned to the dissolver for further disintegration. The through-60, -80, or -100-mesh slurry at 12% solids was discharged to a second surge tank as raw material for the differential settling operation.

The first two fractionation runs were conducted with solvent-damp marc from the continuous solvent extraction pilot plant, the third using undefatted flakes from whole meats, and the fourth undefatted flakes from fine meats as produced in the cottonseed preparation equipment. Result of the first two pilot plant runs, using the solvent-damp marc, showed that solvent extraction and fractionation pilot plants can be mechanically integrated to operate as adjuncts to each other.

Over 1,100 pounds of fine meals were produced from four pilot plant runs. Actual yields varied from 35 to 65%; potential yields as calculated on continued operation for an extended period of time were approximately 75% in all cases. Although the free gossypol content of meal produced from the first run was 0.21% after drying, in the successive runs it was shown that meals can be produced with free gossypol content (6) as low as 0.066%. It was found that the meal with the lower free gossypol was obtained when use had been made of: (a) undefatted flakes of 0.020 inch in thickness; (b) an 8-inch impeller travelling at the rate of 4800 ft./min. peripheral speed in the dissolver-type disintegrator; (c) a 60-mesh screen in the mechanical wet shaker screen.

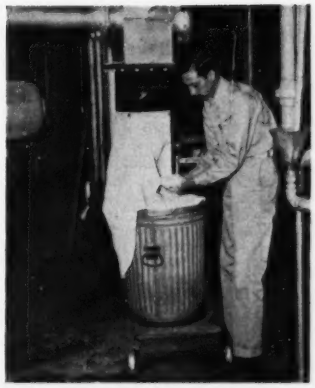

FIG. 2. A. V. Graci, Jr., member of the Engineering and Development Division, Southern Regional Research Laboratory, is shown examining the fractionated fine meal as it is discharged from the continuous dryers.

The mechanical operation of this pilot plant during the initial run was very satisfactory, however, minor alterations were made on the basis of laboratory analyses of samples obtained in each run after each of the four pilot plant runs to improve yield and quality. For example, screening efficiency was improved both by the addition of puddling hurdles and hollow cone sprays, and by the use of 60- or 80-mesh screens in lieu of the 100-mesh screen used for the first run. Less gland breakage was obtained by slowing the disintegrator impeller from 6,000 ft./min. peripheral speed to 4,800 ft./min. without substantially affecting the yield.

The four runs provided sufficient data to solve the problem of desolventizing (drying) of fine meal as produced from fractionation. The runs showed, for the first time, that minor mechanical and operational alterations of the continuous ribbon-type dryers in the solvent-extraction pilot plant would give continuous desolventization of the fine meals. Meals were conveyed through the dryers without clogging and no difficulties were encountered with fine meal dust entering the vapor system.

Preparation Factors Affecting Fractionation

Many of the factors which affect fractionation are interrelated and dependent on each other. Gland size, for example, is a seed characteristic which varies widely with geographical location and from season to season. Gland size not only determines the thickness to which seed can be flaked but also determines the severity of disintegration to which the flakes may be subjected without gland breakage, and the screen size which must be employed to assure their removal from the closed circuit disintegration-screening system. In the preparation of flakes for the solvent extraction-fractionation process it has been found that, when seeds with large glands (up to 250 microns diameter) are flaked to 0.010 inch, some of the glands are broken and some distorted and thus are rendered more susceptible to breakage during dis-

integration. It was shown that seed with these large glands should be flaked to not less than 0.020 inch. Also, a screen size of 60-mesh was required in place of the 80- or 100-mesh to allow these large glands to pass through the screen and to be removed from the closed circuit disintegration - screening system. This prevented their return to the disintegrator where they might be broken.

Indications are that the intensity of disintegration should be decreased with increase in gland size. In the last two pilot plant runs in which low free gossypol meal was obtained, disintegrator impeller peripheral speed was reduced from 6,000 to 4,800 ft./min., flakes were rolled to 0.020 inch, and a 60-mesh screen was used.

Methods to Further Reduce Gossypol

Application of heat and moisture as a method of reducing the free gossypol in fractionated cottonseed meal was investigated in laboratory experiments. Free gossypol could be reduced as much as 50% by increasing moisture to 10-20% and drying at 180° F. under conditions which allowed free circulation of air over the material. These controlled conditions did not significantly lower the nitrogen solubility of the meal. The greatest reduction of the free gossypol took place during the first 20 minutes of treatment.

The controlled conditions were applied on a pilot-plant scale to the fine meals from fractionation runs. The solvent-damp fine meals with free gossypol contents ranging from 0.15 to 0.45% with average moisture contents of 9.5% were dried at 180° F. in the continuous ribbon-type conveyor dryers having a holdup time of 1 hour. Resulting desolventized meals had free gossypol contents ranging from 0.067 to 0.21% showing a reduction of more than 60%. Again the nitrogen solubility was not appreciably affected.

It is believed that the agitation furnished by the ribbon-type conveyors of the dryers uncovered more surface area and accelerated the reduction of gossypol. This belief is supported by the following laboratory experiments. The moisture of a sample of meal of free gossypol content of 0.053% was increased to 15%. Half of the wetted sample was subjected to heat in a closed vessel, and half in an open vessel over which the warm air was circulated. After 20 minutes of heating at 180° F. the half from the closed vessel showed a free gossypol reduction of 6% while the half from the open vessel showed a reduction of 38%. After 60 minutes the free gossypol of the half from the closed vessel had been reduced 17% while that from the open vessel had been reduced 55%. Neither of these samples was agitated as was the material from the pilot-plant dryers, however, which is the reason that the improved reduction in the dryers (60%) at lower moisture was attained.

Gossypol reduction by extraction with methyl-ethyl-ketone was also investigated. Laboratory tests showed that 80-93% of the free gossypol present in meals can be removed by successive washings with 10 parts methyl-ethyl-ketone. For example, the free gossypol content of three meal fractions from the fractionation process was reduced from 0.028, 0.216, and 2.65% to 0.004, 0.042, and 0.175%, respectively. Batch extraction of undefatted cottonseed flakes with methyl-ethyl-ketone at 114° F. produced a meal with a free gossypol content of 0.06%. In another case, batch extraction of hexane-defatted flakes with methyl-ethyl-ketone containing 4% moisture produced a meal containing 0.02% free gossypol.

Product Evaluation

Various quantities of the meal essentially free of pigment glands and of the pigment glands essentially free of meal have been submitted to numerous organizations for the pursual of physiological, chemical, pharmacological, and nutritional investigations.

Preliminary investigations of product quality at this Laboratory indicate that the purified meal from the fractionation process is unlike any cottonseed meal now offered for sale. It is light yellow to creamy white in color and it is produced as a fine flour which is practically free of hulls and has a free gossypol content of about .06%. The nitrogen content is about 10% corresponding to a protein content of about 62.5%. The thiamin content, 39 parts per million, is the highest of any cottonseed meals studied to date at this Laboratory. There is evidence (7) of less loss, due to processing, of essential amino acid content in fractionated cottonseed meal, and a greater availability of these essential amino acids for nutritive purposes. The protein solubility of this meal in 0.5 N sodium chloride solution is over 80%.

The availability of pigment glands has made possible investigations of the structure, chemical properties of the pigments contained in the pigment glands, their toxocological, physiological, and pharmacological effects; and the determination, on a preliminary basis, of possible fields of utilization of pigment glands and gossypol.

The following investigations are now being carried on with products from the fractionation pilot plant: studies on essential amino acids present in the cottonseed; studies on the toxic effect on rats

of pigment glands and gossypol; experiments on chick growth; work on egg yolk discoloration; general pigment gland analyses; the production of gossypol; and the determination of physiological action of water-soluble combination products, such as gossypol-sugars and proteins.

In addition to these lines of work, considerable research is required on physiological and toxocological effects of gossypol, its related pigments, various gossypol complexes, and other components of the pigment glands.

The gossypol content of an annual crop of cottonseed is about 20,000 tons. Any significant portion of this annual production of gossypol that can be used industrially would yield an appreciable additional return to the cottonseed industry.

Investigations being conducted at this laboratory have indicated the possibility of producing gossypol at a cost of 20¢ to $1.00 per pound depending on the process and the purity of the product. The history of the chemical industry has shown that uses are found for organic chemicals that can be produced in commercial quantities for about 20¢ per pound. This factor makes gossypol, long of interest to the chemist, of immediate interest as a potential new product from cottonseed for commercial exploitation.

Summary and Conclusions

Batch pilot-plant fractionation has been superceded, with the improvement of the unit operations involved, by a continuous process, the mechanical operation of which is satisfactory.

Characteristics of the seed used proved to be of primary importance, not only in the operation of the fractionation pilot plant, but also in the preparation of flakes to be used in the fractionation process. For example: gland size determines thickness to which meats can be flaked for minimum gland damage. Gland size also determines the intensity of disintegration to which the flakes can be subjected, and the screen size which must be used in the screening operation.

The conversion from batch to continuous operation showed an increased yield of fine meal. While the results so far reported indicate that the free gossypol of the fine meal from the continuous op-

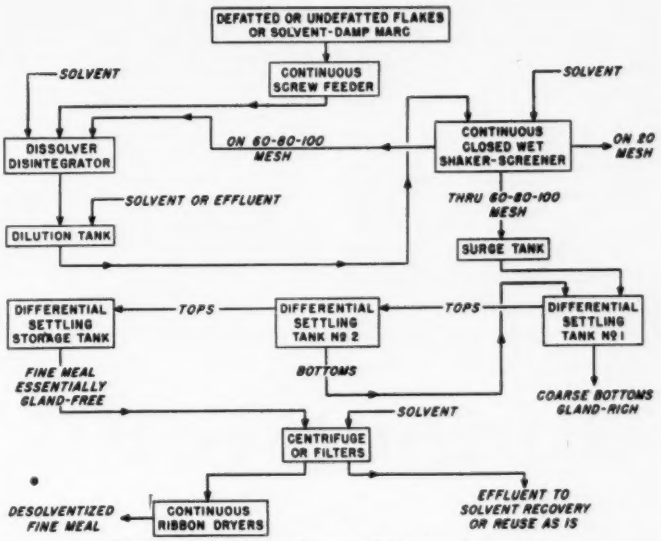

FIG. 3. Simplified flow diagram of fractionation process.

eration is slightly higher than that obtained from batch operation, it is believed that further improvement of equipment and modification of operating conditions will achieve higher yields and lower free gossypol in fine meal than was obtained from the best batch operation.

Adaptation of a combination of solvent extraction-fractionation plants commercially offers high yield of good quality oil plus good yield (about 75%) of fine meal. Further work is required, however, to produce a higher quality fine meal with low free gossypol content.

Drying of fine meal has been successfully conducted on a continuous pilot-plant scale for the first time. This drying method can be immediately utilized by industry. It has been shown that the free gossypol of fine meals can be reduced over 60% during the drying operation if the moisture content of the feed to the dryers is approximately 10%, the drying temperature 180° F., and the holdup time in the dryers about 1 hour.

Cottonseed meals essentially free of pigment glands and pigment glands essentially free of meal have been made available to numerous organizations for fundamental and practical research.

Acknowledgment

Appreciation is due to Walter A. Pons, Jr., and Mack F. Stansbury for assistance in making free gossypol determinations and to Joseph L. Hecker for tracing of the flow diagram.

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S & S Services Install New Test Chamber for Engines

The South's largest commercially owned test chamber for testing starting and operating characteristics of diesel and gasoline engines at temperatures as low as 80°F. has recently been installed in the Houston plant of Stewart & Stevenson Services, the nation's largest distributors of GM diesel engines.

"Stewart & Stevenson Services has been one of the pioneers in the field of low temperature winterization of diesel and gas engines for operating and starting at temperatures below -65°F.," Joe Manning, vice-president and general manager, said.

One of the contributing factors in the installation of the new cold test chamber, it was said, is the increasing demand of government requirements for diesel and gas driven generator sets for starting and operating at these low temperatures. In order to meet these demands and those of commercial industry, Stewart & Stevenson Services were the first in the South to install a chamber capable of testing as low as -80°F.

At the present time, Stewart & Stevenson Services are producing diesel generator sets to operate under these extreme conditions. They are one of the four largest producers in the U.S. of diesel and gasoline engine generator sets ranging from 10 to 150 KW.

Archer-Daniels-Midland Sells Portland Mill

Sale of its Portland, Ore., flaxseed oil mill has been announced by Archer-Daniels-Midland Co., Minneapolis, Minn., oil mill operator.

In announcing the sale President T. L. Daniels explained that recent geographical shifts in flaxseed production would make future operation of the Portland mill unprofitable. The plant was purchased by A-D-M from the American Linseed Co. in 1928 to crush flaxseed imported from India. Since Asia has had little flaxseed to export in recent years and local production in the Portland area has dwindled from more than 200,000 bushels annually to only 30,000 bushels last season, there is little need for a crushing mill in the Pacific Northwest.

David Fain of the California Bag & Metal Co., Portland, purchaser of the plant, has indicated it will be used in conjunction with operation of his company, leaving that area without a flaxseed crushing mill for the first time in 40 years.

1950 World Report:

Flaxseed Production Shows an Increase

World flaxseed production for 1950 is estimated at 140.7 million bushels, according to the latest information available to USDA's Office of Foreign Agricultural Relations. The 1949 estimate has been revised downward to 139.4 million bushels.

• **Canada and Mexico** — Canada's 1950 flaxseed crop, estimated at 4.5 million bushels, is about eight percent less than the September forecast but is almost double the 1949 output. Mexico harvested 1.4 million bushels compared with about two million bushels in 1949. According to trade reports, growers in Sonora, where about two-thirds of the crop is produced, have increased their plantings for harvest in April 1951.

• **United States** — Flaxseed production in the U.S. in 1950 is now estimated at 39.3 million bushels against 43.9 million a year earlier and the record crop of 54.5 million in 1948. The 1950 crop was harvested from 3.9 million acres, 21 percent less than in 1949 but well above the prewar average of 1.5 million acres.

• **Europe**—Flaxseed production in Europe was down 12 percent from 1949 due to drought in some countries and reduced plantings in others. Sweden's 1950 crop was 1.5 million bushels against a record of more than two million bushels in 1949. The United Kingdom's production of 560,000 bushels was about 40 percent below the preceding year and the smallest since 1945. In these two countries flaxseed production is a relatively recent development.

• **Asia**—Turkey's 1950 flaxseed production of 1.4 million bushels was about equal to that of a year earlier but was considerably smaller than the record crop of 1.8 million bushels in 1948. India's 1950 flaxseed crop was 17 million bushels from 3.8 million acres. This was a production decrease of four percent and an acreage decrease of two percent from 1949. The reductions occurred chiefly in Bihar as a result of unfavorable weather throughout the harvest season.

• **South America**—Argentina's 1950 flaxseed production is estimated at approximately 30 million bushels compared with around 25 million in 1949. The moderate increase is attributed to favorable weather during the growing season in the region west of Santa Fe City, where flaxseed production in the previous several years was reduced by drought. Flaxseed growing is shifting to the north compared with prewar. A relatively small area is now being planted in the Province of Buenos Aires, formerly one of the more important producing areas.

Brazil's 1950 flaxseed crop of 1.3 million bushels was almost double the preceding year's output. Based on a sizeable increase in acreage, Chile probably produced about 250,000 bushels of flaxseed. Uruguay's flaxseed output in 1950 is estimated at 3.7 million bushels compared with 2.9 million in 1949.

• **Africa** — Africa's flaxseed production dropped to 1.8 million bushels in 1950 after reaching a record outturn of 4.7 million in 1949. The sharp curtailment in Egypt's crop was due to reduced acreage because of heavy stocks of linseed oil. The decline in the French colonies came chiefly as a result of reductions in or removal of price support. Farmers were also discouraged because of heavy rust infection in 1949.

Import Controls Relaxed On More Fats and Oils

The U.S. Department of Agriculture announced last month the removal of several additional fats and oils from import control under Public Law 590. The action is in line with the department's general policy of removing import controls as soon as practicable.

Commodities removed from import control last month are: crude, refined, and denatured cottonseed oil, soybean oil, and sunflower seed oil; lard compounds and lard substitutes; combinations and mixtures of animal and vegetable oils; soybeans; and sunflower seed.

The only commodities remaining under import control under Public Law 590 are butter and butter oil, peanuts, peanut oil, peanut butter, flaxseed, flaxseed screenings, linseed oil, rice and rice products.

Storage of Cottonseed

(Continued from Page 17)

particular mixture of two chemicals (propylene glycol dipropionate and 1,-3-dimethyl 6-bischloromethyl benzene) on heating, formation of free fatty acids, and other properties of stored cottonseed. This material is being organized and will be presented for publication at an early date.

Development of a Method for Heating Cottonseed

To ascertain the effect of heat on cottonseed in laboratory experiments, it was necessary to develop a method for heating seed in approximately 1,700 gm. lots followed immediately by rapid cooling of the seed to room temperature. To provide uniform heating, thorough and constant mixing must be maintained throughout the heating interval, but mixing must occur without physical injury to the seed. In addition there should be only a minimum loss of sample during the heating and cooling operation. Further, in order to estimate the effect of heat alone, it must be possible to heat and cool the seed without a loss in moisture content.

With some modification, the Baker-Perkins[3] steam-jacketed mixer met the above specifications.

The maximum desired heating temperature was 160° F. and, after preheating the machine to 200° F., 1,700 gms. of 20% moisture cottonseed were equilibrated to 160° in 2-4 minutes. After 30 minutes of heating, followed by a 3-minute cooling period, 4% moisture was lost from the seed. The moisture content could be maintained, however, by adding, as the seed was loaded into the mixer, a volume of water equivalent to the amount of moisture lost during heating and cooling. By checking moisture contents, the sample was determined to be uniform. Only 100 to 150 gms. of seed were lost during the entire process.

[3]The use of trade names in this article is for identification and does not imply endorsement by the Department of Agriculture of this product over similar products not mentioned.

Effect of Heat on Naturally Moist Cottonseed Containing 20% Moisture

Cottonseed of 20% moisture and 2% free fatty acids content was obtained early in the 1950 harvest season from a central Louisiana mill. The seed was heated for 10-, 20-, and 30-minute intervals at temperatures of 100°, 120°, 140°, and 160° F., in such a manner that the moisture content was maintained during the heating and cooling. The sensitivity of the germinating capacity of a seed serves as a useful measure of the effect of any treatment on that seed. It was found that heating at temperatures of 100° and 120° for the various time intervals did not cause any great change in the number of viable seeds. A temperature of 140° for 10 minutes, however, produced a significant rise of 18% in viable seeds over that of unheated seed, and a 10% increase over that of seed heated to 120° for 30 minutes. Exposure of the seed to a temperature of 160° for only 10 minutes destroyed viability completely. The above results of the effect of heat on viability have been substantiated by heating a second lot of 20% moisture seed to the same temperature for the identical time intervals.

To obtain data on the effect of heat alone on the development of free fatty acids in the oil, small subsamples of all the heated lots of seed were stored in sealed glass jars of 80° F. Periodic determinations of free fatty acids showed that application of heat without subsequent reduction of moisture did not prevent formation of free fatty acids. Seed heated to 160° for each of three time intervals showed a rapid rise in the content of free fatty acids earlier than in any other samples. These are the lots of seed in which viability had been destroyed.

To understand the relative contribution of the different variables, heat, reduction in moisture, and type of storage, involved in these experiments, each must be isolated and measured alone. In the set of experiments reported above, the moisture content of the seed was not reduced during handling and the seed was stored under anaerobic conditions (in absence of free-air circulation). To determine the combined effects of heat plus a reduction in the moisture content of the seed, another set of parallel experiments has been initiated repeating every detail except that the moisture content was allowed to seek its own level after heating.

Seed stored in sealed jars (anaerobic conditions) has access to only a limited quantity of oxygen which is used up as the seed respires during storage. Such conditions may be considered similar to those that exist in the center of a large pile of cottonseed. On the other hand, seed on the edges of the pile will have

easy access to oxygen. In addition, there will be varying degrees of availability of oxygen and, therefore, differences in the numbers of viable seeds between the fringes and the center of any seed pile. Therefore, a third set of experiments has been set up parallel in every respect to the second except that an ample supply of oxygen is furnished the seed at all times (aerobic conditions). Sufficient data from the last two sets of experiments are not yet available for this report.

Effect of Selected Fungicides On Spontaneous Heating Of Cottonseed

It is possible that agents other than heat may be necessary to provide the required improvement in the storage quality of chemically treated cottonseed. A fungicide, such as the new improved Ceresan[3]—5% ethyl mercury phosphate —which has been used in experiments at the Delta Branch Experiment Station, Stoneville, Mississippi, may be applied to the seed to supplement chemical treatment and to extend the storage interval during which the formation of free fatty acids is retarded. An effective fungicide must be relatively nontoxic to humans and animals, but effective at low concentrations in inhibiting microbial growth. In addition, a fungicide cannot be used on the seed if it stimulates spontaneous heating or the formation of free fatty acids, destroys viability, or increases the red color of the oil processed from the seed.

Selected fungicides are being tested by previously developed methods to determine their effect on the spontaneous heating of cottonseed during storage. The results of these investigations so far show, that at a concentration of 0.1%, equivalent to 2 lbs. per ton of seed, the nine fungicides tested fall into two groups: (1) those that do not stimulate or inhibit heating and (2) those that inhibit heating. In the first group are calcium propionate and salicylic acid. The remaining fungicides, benzoic acid, Ceresan M[3] (7.7% ethyl mercury-p-toluene sulfonanilide, tested because of its known fungicidal activity on cottonseed even though it is toxic), biphenyl, Spergon[3] (96% tetrachloro-p-benzoquinone), Phygon[3] (98% 3-dichloro-1, 4-naphthoquinone), 1,3,5-trimethyl-4-nitroso-5-phenylpyrazole and 8-hydroxyquinoline, fall in the second group. Seed treated with calcium propionate and salicylic and benzoic acids were moldy. These lots of seed were either heating or beginning to heat. All other lots in which heating was inhibited were only slightly moldy, except those treated with biphenyl and 8-hydroxyquinoline, on which there was no visible mold.

Future Work

A continuation of the investigations of the effect of heat on cottonseed will include experiments parallel to those reported here using 16% and 12% naturally moist cottonseed. In each case heat without a reduction in moisture as well as heat plus a reduction in moisture content will be investigated. The seed will be stored under both aerobic and anaerobic conditions. Eventually the limitations encountered in the application of heat to naturally moist cottonseed of various moisture contests will become more clearly defined. It should be possible, then, to select a beneficial heat treatment to complement chemical treatment.

FIG. 2. Miss Edith A. Jensen, Fellow of the National Cottonseed Products Association, is shown unloading the mixer after a heating run. The specially built aluminum adapter was made in the mechanical shops of the Southern Regional Research Laboratory. Its use has materially lowered the loss of seed during handling.

During the coming year, it is expected that a laboratory method for obtaining small samples of oil comparable in composition to oil produced in commercial mills will have been developed by the Analytical Division of this Laboratory. Its application should demonstrate clearly the effect of heat on the red color of the oil produced from naturally moist cottonseed.

Future investigations with fungicides includes the determination of their effect on: (1) the development of free fatty acids in the seed; (2) viability; and (3) the development of red color in the oil.

In this connection, it should be noted that several fungicides are now under investigation in cooperative viability experiments with the Bureau of Plant Industry at Beltsville, Maryland, and the Delta Branch Experiment Station at Stoneville, Mississippi. The data from these experiments will be made available to the Fellow.

When suitable fungicides and beneficial heat treatments have been found they will be combined with each other and eventually with chemical treatment in laboratory tests to compare their effectiveness to that of the standard chemical mixture in preventing the formation of free fatty acids in cottonseed during storage.

Acknowledgment

In conducting this research, the Fellow of the National Cottonseed Products Association has had the assistance of and the association of members of the regular staff. The Fellow is happy to acknowledge the assistance of Frederick Andrews in completing the mill-scale experiment. The cooperation in this experiment of J. P. Barnett, President; I. M. Hoover, Superintendent; and Wales Newby, Laboratory Director, Cotton Oil Products Co., Opelousas, Louisiana, is gratefully acknowledged.

The Fellow was associated with Robert E. O'Connor, Beverly Webre, and Jean Lambour during the development of the method for heating cottonseed and in subsequent heating trials. Further, the Fellow is indebted to the Analytical & Physical Chemical Division and in particular to Walter Pons for their efforts in getting under way work on the development of a laboratory method for obtaining samples of oil comparable to oil produced in commercial mills.

U. S. Cotton Quality

Report for Ginnings Through Jan. 15

Upland cotton ginned in the U.S. through Jan. 15 this season averaged higher in grade and longer in staple than a year earlier, according to USDA reports. Strict Middling and higher grades comprised a larger proportion of total ginnings than a year ago. There was also relatively more Middling while the proportions of Strict Low Middling and lower white grades were considerably smaller.

Spotted and Tinged cotton comprised higher proportions of the total than a year earlier but there was a sharp decrease in the proportion of Gray cotton.

Nearly half of this year's crop has stapled 1-1/16 inches and longer. This season's ginnings of the lengths one inch and shorter were proportionately smaller than for any other crop on record. The 9,678,000 bales of cotton ginned through Jan. 15 this season were 38 percent smaller than a year earlier and equivalent to 99 percent of the indicated 1950 crop. Cotton ginned to the same date a year ago was equivalent to 98 percent of the 1949 crop.

• **Grade Index Is Higher**—The grade index of cotton ginned through Jan. 15 was 95.1 (Middling White equals 100) compared with 94.5 for the corresponding period last season. Index for cotton ginned during the Dec. 1-Jan. 15 period this season was 84.4 against 88.4 a year earlier.

The higher average grade of this year's crop is attributed largely to favorable weather for the maturity and harvesting of cotton over most of the Belt during October and November. Also the recent trend for many ginners throughout much of the Belt to improve ginning facilities by the installation of modern conditioning and cleaning equipment has made improved ginning services available to a large proportion of cotton farmers. The grade index of this season's supply, i.e. carry-over Aug. 1 plus ginnings to mid-January, was 95.5 against 94.8 a year earlier.

• **Longer Staple Length**—The average staple length of upland cotton ginned to mid-January this season was 32.7 thirty-seconds inches. This compares with 32.1 for the corresponding period last season. Cotton ginned during the Dec. 1-Jan. 15 period this season averaged 30.9 thirty-seconds against 30.2 a year earlier.

Increase in the average length is to a considerable degree the result of (1) ample rainfall in the eastern and central areas of the Belt during the growing season and (2) the higher proportion of the total crop produced in the Far West where the staple average was over 1-1/16 inches. The average staple length of the supply (carry-over plus ginnings to mid-January) was 32.8 thirty-seconds inches compared with 32.4 a year earlier.

• **Total Ginnings**—Cotton ginned through Jan. 15 totaled 9,678,247 bales compared with 15,635,667 bales to the corresponding date a year earlier and 14,140,444 two years ago, according to the Bureau of the Census. American-Egyptian cotton ginned to mid-January totaled 52,423 bales against 3,648 a year earlier.

CALENDAR

Conventions • Meetings • Events

• February 19-20—National Agricultural Aviation Conference, Hotel Peabody, Memphis, Tenn. Charlye Rose, Roseland, Ark., program chairman.

• February 20-21-22—National Association of Soil Conservation Districts annual convention. Oklahoma City, Okla. Tarleton A. Jenkins, Mezzanine Floor, Skirvin Tower Hotel, Oklahoma City, Okla., publicity committee chairman.

• March 4-5—Georgia Cotton Ginners' Association annual convention. Henry Grady Hotel, Atlanta, Ga. Warren B. Hodge, Unadilla, Ga., president.

• March 15-16 — National Cotton Ginners' Association annual convention. Peabody Hotel, Memphis, Tenn. Horace Hayden, 1004 Perrine Bldg., Oklahoma City 2, Okla., executive vice-president.

• April 2-3-4—Texas Cotton Ginners' Association annual convention. Fair Park, Dallas. Jay C. Stilley, 109 N. Second Ave., Dallas, executive vice-president. For exhibit space, write R. Haughton, president, Gin Machinery and Supply Association, P. O. Box 444 (3116 Commerce St.), Dallas 1, Texas.

• April 9-10—Valley Oilseed Processors Association annual convention. Buena Vista Hotel, Biloxi, Miss. C. E. Garner, 1024 Exchange Bldg., Memphis, Tenn., secretary.

• May 1-3—American Oil Chemists' Society spring meeting. Roosevelt Hotel, New Orleans, La. H. L. Roschen, Swift & Co., Chicago, Ill., secretary.

• May 14-15-16—Fifty-fifth annual convention, National Cottonseed Products Association. Palm Beach Biltmore Hotel, Palm Beach, Fla. S. M. Harmon, Sterick Bldg., Memphis, Tenn., secretary-treasurer.

• May 30-31-June 1—National Oil Mill Superintendents Association annual meeting. Plaza Hotel, San Antonio, Texas. H. E. Wilson, Wharton, Texas, secretary-treasurer.

• June 3-4-5—Joint convention North Carolina Cottonseed Crushers Association and South Carolina Cotton Seed Crushers' Association. The Cavalier, Virginia Beach, Va. Mrs. M. U. Hogue, 612 Lawyers Bldg., Raleigh, secretary of North Carolina association; Mrs. Durrett L. Williams, 609 Palmetto Bldg., Columbia, secretary of South Carolina association.

• June 4-5—Arkansas-Missouri Ginners' Association annual convention. Arlington Hotel, Hot Springs, Ark. J. W. Karsten, Jr., Kennett, Mo., executive vice-president-secretary-treasurer.

• June 4-5 — Oklahoma Cottonseed Crushers' Association annual convention. Lake Murray Lodge, Ardmore, Okla. Horace Hayden, 1004 Perrine Bldg., Oklahoma City 2, Okla., secretary.

• June 10-11-12 — Texas Cottonseed Crushers' Association annual convention. Shamrock Hotel, Houston, Texas. Jack Whetstone, 624 Wilson Bldg., Dallas 1, Texas, secretary.

• June 14-15 — Mississippi Cottonseed Crushers Association annual convention. Hotel Buena Vista, Biloxi, Miss. J. A. Rogers, P. O. Box 3581, West Jackson Sta., Jackson, Miss., secretary.

• June 18-19 — Joint convention Alabama-Florida Cottonseed Products Association and Georgia Cottonseed Crushers' Association. San Carlos Hotel, Pensacola, Fla. T. R. Cain, Professional Center Bldg., Montgomery 4, Ala., secretary of Alabama-Florida association; J. E. Moses, 318 Grand Theatre Bldg., Atlanta 3, secretary of Georgia association.

• June 20-21-22 — Tri-States Cottonseed Oil Mill Superintendents' Association annual convention. Biltmore Hotel, Atlanta, Ga. L. E. Roberts, 998 Kansas, Memphis 5, Tenn., secretary-treasurer.

(Continued from Page 13)

sized by the fact that for gins with comparable overhead cleaning, drying, and extracting set-ups, the grades obtained by plants not having lint cleaners were slightly higher than grades obtained at lint-cleaner gins on comparable seed cotton when lint samples were taken before the lint cleaning.

In terms of bale value benefits, an average seasonal increase in value of $3.91 per bale was obtained on lint-cleaner - equipped gins on hand - picked cotton through the use of their lint cleaners, after taking quality improvements into consideration and after adjusting for the loss in weight incurred by the use of this machinery. During the early part of the season, however, when the grades normally obtained were Middling or better, the loss in weight resulting from the use of these cleaners and the narrow premiums for the higher grade ranges caused value benefits of less than $1 per bale. Grade improvements on machine-picked cotton with these gins amounted to one-third grade in the Low Middling range as a result of lint cleaning and gave an increased value of $3.31 per bale, after considering quality benefits and weight losses. For cotton ginned on plants not equipped with lint cleaners as compared with cotton ginned on the other plants and subjected to lint cleaning, the seasonal bale value advantage of the latter amounted to $2.50 on hand-picked and $3.31 on machine-picked cotton. As in the case of comparisons of cotton ginned with and without lint cleaning, on the lint-cleaner-equipped gins as a group, bale benefits ranging from almost $4 to $6 were confined largely to later picked cotton. After making adjustments for added ginning charges made by gins equipped with lint cleaners, the net bale value benefits to producers amounted to approximately $1.25 and $2.00 for hand- and machine-picked cotton, respectively.

In addition to the technological and economic studies of lint cleaning here reported as being completed, similar studies have been made of cotton-drying practices. The technical information has been summarized but the economic data are still in the process of analysis. The results of the 2 years of work on the effects of drying at temperatures of 130° F., to 350° F., on spinning value are now available.

During the 1949 season, single-stage dryings were made on green and damp hand-picked and machine-picked cottons with drying air temperatures of 180° F., 220° F., 260° F., and 350° F. Also, dryings were made with three driers at moderate, high, and very high drying air temperatures, the first drier being operated with temperatures ranging from 180° F., to 280° F., the second from 160° F., to 260° F., and the third from 140° F., to 200° F.

On the hand-picked cottons, grade benefits of one-third grade resulted at the higher temperatures. There was a tendency for length and, to some extent, for fiber length uniformity and tensile strength to become increasingly lower as more intense seed cotton drying was employed. It is doubtful that value benefits from the grade improvements would offset value losses associated with weight reductions and fiber quality penalties. Associated with the increasing losses in moisture content and fiber length attributable to more intense seed cotton drying, there appeared to be proportionate adverse effects on yarn strength. In many instances, yarn appearance grade showed deficiencies for the over-dried cotton.

Although the tests on hand-picked cotton showed that intense drying of clean cotton produced doubtful over-all benefits, grade benefits on machine-picked cotton were very pronounced as a result of following this practice to increase trash removal by the cleaners. In general, the greater the moisture removal from machine-picked cotton as a result of increased drying, the higher was the grade of resulting ginned lint, this increase in grade ranging from Low Middling Plus for the least drying in one drier to Strict Low Middling for the most drying in three driers. Fiber laboratory tests showed slight but consistent reductions

New Electronic Tester

THE MOISTURE TESTING range, flexibility and convenience features of the new Steinlite Electronic Tester were outlined for Seedburo Equipment Company's sales staff by E. A. Moore (pointing to display), vice-president and general manager of the Fred Stein Laboratories, Atchison, Kan., manufacturer of this instrument for Seedburo's exclusive distribution. I. B. Phillips (seated at right rear), Seedburo president, conducted the sales meeting. Standing beside the poster (center, rear) is A. O. Seehafer, vice-president and research director. Standing beside Seehafer is R. D. Harfst, vice-president in charge of Steinlite sales.

in fiber length and strength when three driers were used and the lint moisture content was reduced to nearly 4 percent as compared with 6.3 percent for single-stage drying at moderate drying air temperatures. The spinning test results confirmed the fiber test data to the extent of showing that while drying was a factor in reducing manufacturing waste, excessive drying showed a tendency toward lowering yarn strength and appearance grade.

The 1950 test results confirm those obtained on the 1949 crop, thus definitely indicating possibilities for material losses in yarn strength when reaching drying air temperatures as high as 250° F. During both years there was no evidence of increased neppiness of the lint as a result of high drying air temperatures, but yarn appearance grades showed a tendency toward losses at the very high temperatures.

[2]Acknowledgement is made to the staff of the cooperating bureau, the Bureau of Plant Industry, Soils, and Agricultural Engineering, at Stoneville, Miss., for contributions in performing the drying tests here discussed and performed at the U.S. Cotton Ginning Laboratory. The Laboratory is operated jointly by the Bureau of Plant Industry, Soils, and Agricultural Engineering of the Agricultural Research Administration, and the Cotton Branch of the Production and Marketing Administration.

Key Materials Needed to Insure Fertilizer Supply

If the farmers of America are to be successful in attaining the increased food, feed and fiber goals set by the government, greater consideration must be given to the needs of the fertilizer industry for critical material, Russell Coleman, president, the National Fertilizer Association, which represents more than 400 members of the industry, has warned.

"Removal of acreage allotments can mean little to crop production," declared Dr. Coleman, "unless the fertilizer industry, so closely allied with agriculture, is accorded treatment with regard to supplies of sulfuric acid similar to that given other key industries such as steel, rubber and petroleum.

"Our industry's capacity is approximately three times that which existed in 1940, just prior to World War II. Even though fertilizer demand this year may be 20 percent greater than last year, we can come close to producing all of the nitrogen and potash required. But such increased production will not be completely effective unless supplies of sulfuric acid are made available for the manufacture of superphosphate, which in turn is a key component of most fertilizers.

"Only if our leaders recognize the vital role of agriculture in America's defense and allot to it its proportionate share of critical materials can our farmers efficiently do the job assigned to them."

Cold Is Welcomed by U. S. Tung Growers

The present outlook is for the heaviest crop of tung nuts in history, according to J. M. Sinclair, Poplarville, Miss., Pearl River county agent. Pearl River County is in the heart of the U.S. tung belt.

"Tung orchard owners are finding this winter ideal so far with sufficient cold to hold the trees dormant," Sinclair declared.

Laugh IT OFF

Young and inexperienced father (looking at the triplets the nurse had just brought out): "We'll take the one in the middle."

• • •

He: Honey, can I bother you for a kiss?

She: Of course, I wouldn't want a kiss that didn't bother me.

• • •

Boss: I can't imagine what I'd do without you.

Secretary: Well, I've been here a year, and you haven't found out what you could do with me!

• • •

Two little Negro boys were loitering on a corner when one said to the other: "How old is you?"

"Ah's five," was the reply. "How old is you?"

"Ah don't know."

"You don't know how old you is?"

"Nope."

"Does women botha' you?"

"Nope!"

"You'se fo'."

• • •

New bride entering home with the new groom: Jack, darling, are you sure we haven't been married before? This house looks familiar.

• • •

A colored preacher was hearing confession. In the middle of it, he stopped the young sinner, saying, "Young man, you ain't confessin'—you's braggin'."

• • •

After reviving the patient the doctor asked, "How did you happen to take that poison? Didn't you see the word 'poison' on the label?"

"Yeah, I saw it, but I didn't believe it."

"Why not?"

"Because right under the word 'poison' was another word in bigger letters that said 'lye'."

• • •

• • •

Girl: I wish you'd vaccinate me so the blemish will not show.

Doc: My fee is ten bucks in advance.

Girl: But why the payment in advance?

Doc: I often weaken in such cases and don't charge at all.

• • •

What do you think of a man who constantly deceives his wife?"

"I think he's a genius."

• • •

"Sir, I wonder if you'd help a girl in trouble?"

"Sure, what sort of trouble do you want to get into?"

• • •

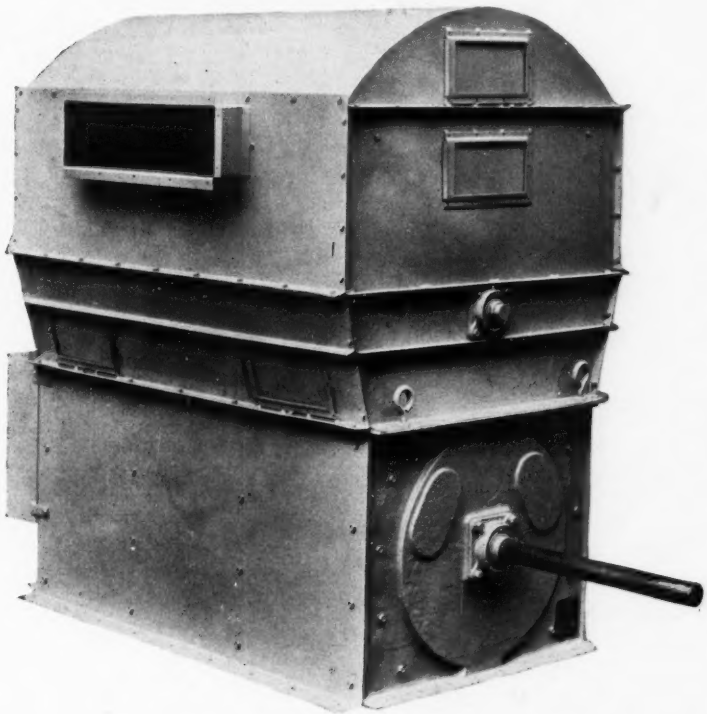
The district attorney was questioning a Kentucky colonel in court. Unable to shake his testimony, he tried sarcasm.

"They call you colonel," he sneered. "In what regiment are you a colonel?"

"Well," drawled the colonel, "it's like this—the 'Colonel' in front of my name is like the 'Honorable' in front of yours. It doesn't mean a thing."

A Separator Made to Perform Under All Conditions

Trouble Free



Why have this trouble spot in your plant again this season

Now 3 years of field proven operation over pressure drying systems and on all kinds of cotton. Owners report increased suction and perfect operating performance.

Made 50″ and 72″ wide. Can easily be installed in any gin plant.

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